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the Big FIX

How Toyota
Retooled IT to
Build Business
Credibility Page 40

BY THOMAS WAILGUM

CIO **Barbra Cooper** hired a consultancy to interview top Toyota executives to find out how IS was doing. "The results were stinging," Cooper says. "But you can't be a CIO and not face that."

WHY WE NEED A TECH CZAR

CIOs say government should set policy for Internet, cybersecurity, research and training.

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Get the best subscription licensing deals, avoid the pitfalls.

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IN A LEAGUE OF ITS OWN

The strategy behind baseball's e-commerce success.

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How to light up a supply chain.

Advance Transformer, a leading component manufacturer for lighting systems, had legacy IT systems that no longer kept up with production demands. They turned to HP to better manage their supply chain. Now, using an IT Service Management approach with HP OpenView software and HP BladeSystem servers, their systems automatically solve problems as they occur. All this has reduced production time from 28 to 5 days, cut inventory levels by 50% and revealed the bright side of change. www.hp.com/adapt

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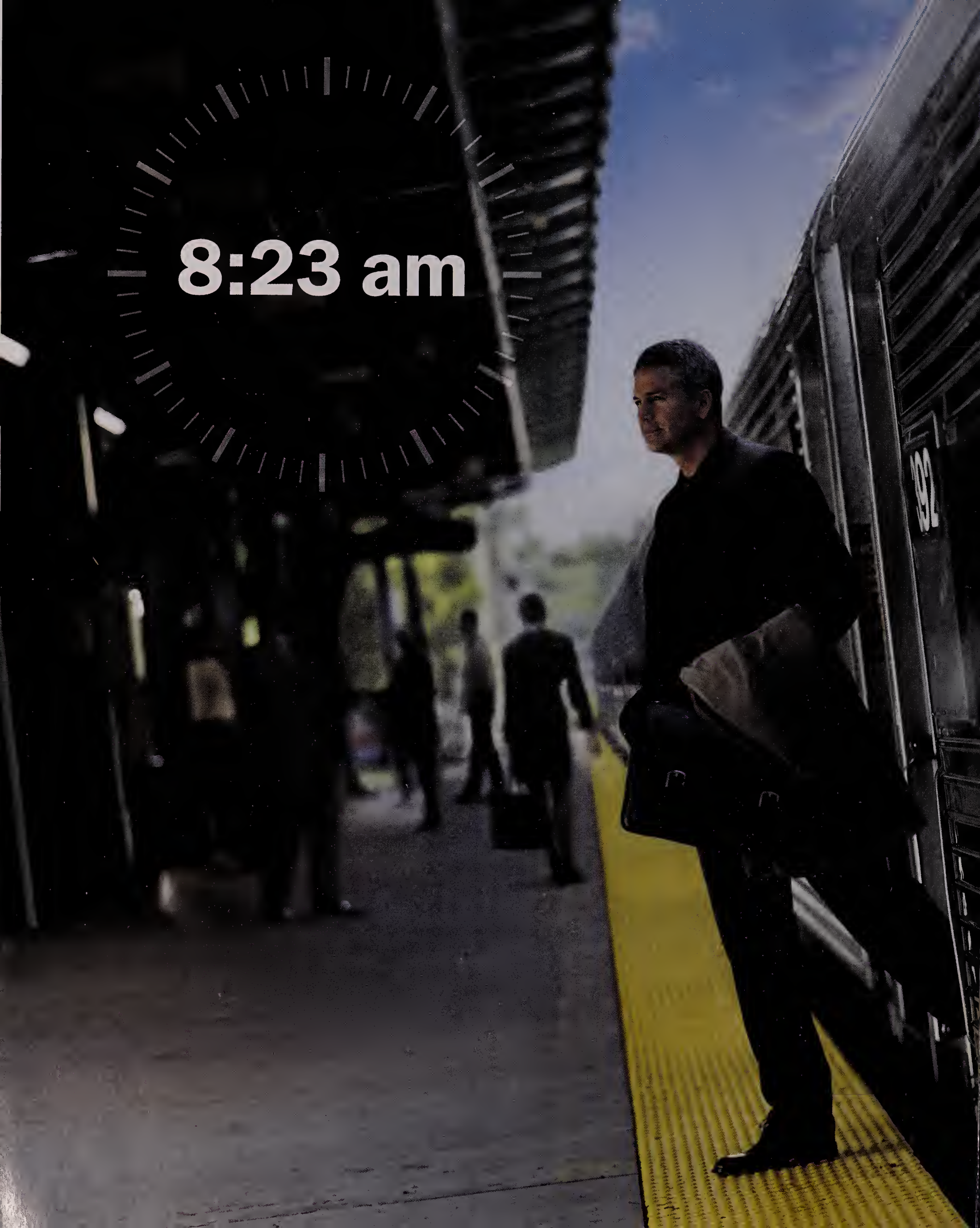
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Whole Foods CIO **Mike Clifford** is convinced that his software subscription license helps him better manage risk and predict his future costs.

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Alignment

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How Toyota's CIO radically restructured her entire approach to IT and regained the trust of the business. **Feature by Thomas Wailgum**

THE TOYOTA TAPES | **CIO.COM**

Hear MP3 interviews on the IS reorganization within Toyota, with insights from CIO Barbra Cooper about the new Office of the CIO. Download the files at www.cio.com/041505.

COVER PHOTO BY DANIEL HENNESSY

E-Commerce

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Major League Baseball used CRM to succeed with a venture that many thought would strike out. **Feature by Jon Surmacz**

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You have to know what questions to ask about your business before you can install a successful IT system. Just ask the FBI. **Column by Michael Schrage**

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Digital video surveillance today is more than a security technology; it's a business enabler. **Feature by Scott Berinato**

Technology Policy

WHY GEORGE BUSH NEEDS A TECHNOLOGY CZAR | 50

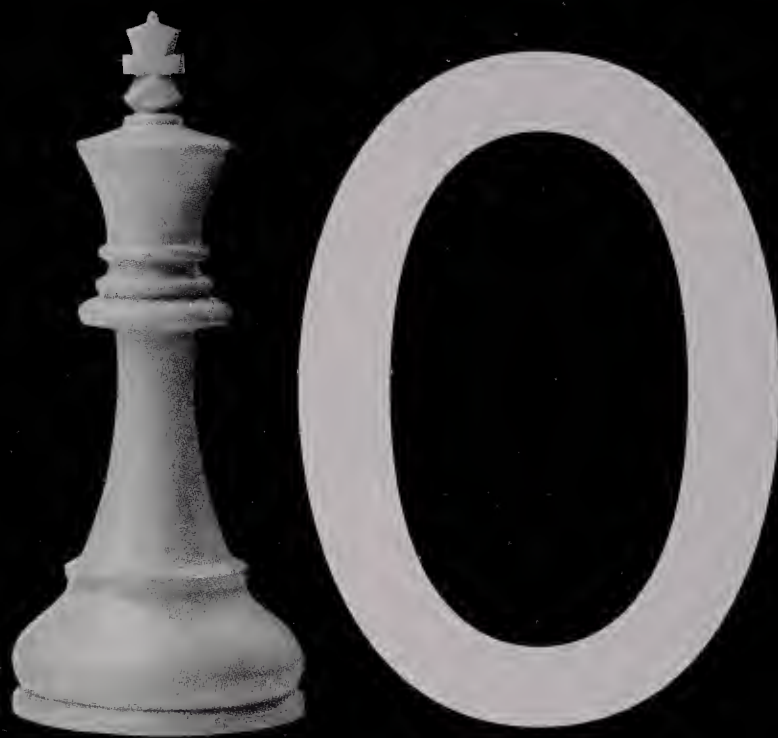
If the United States wants to retain its current lead in technology innovation, the president should appoint a tech czar who can help formulate a coherent policy.

Feature by Ben Worthen

TECH POLICY ONLINE | **CIO.COM**

See what China's tech policy has done for that country in "The Great Leap Forward." And read more about U.S. policy concerns in our online Special Report on Tech Policy. Find both at www.cio.com/041505.

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CFO **Tracey Doi** enjoys a collaborative partnership with finance's divisional information officer, **Doug Beebe**—one of many business-IT relationships inspired by a total restructuring of IT at Toyota Motor Sales USA.

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Vendor Management

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While subscription licensing offers certain advantages, beware unforeseen price increases down the road.

Feature by Susannah Patton

VENDOR MANAGEMENT ONLINE | CIO.COM

A collection of articles and research on vendor management is available in an online Special Report at www.cio.com/041505.

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» **Tech Policy** Senior Writer Ben Worthen probes public policy affecting IT and CIOs.

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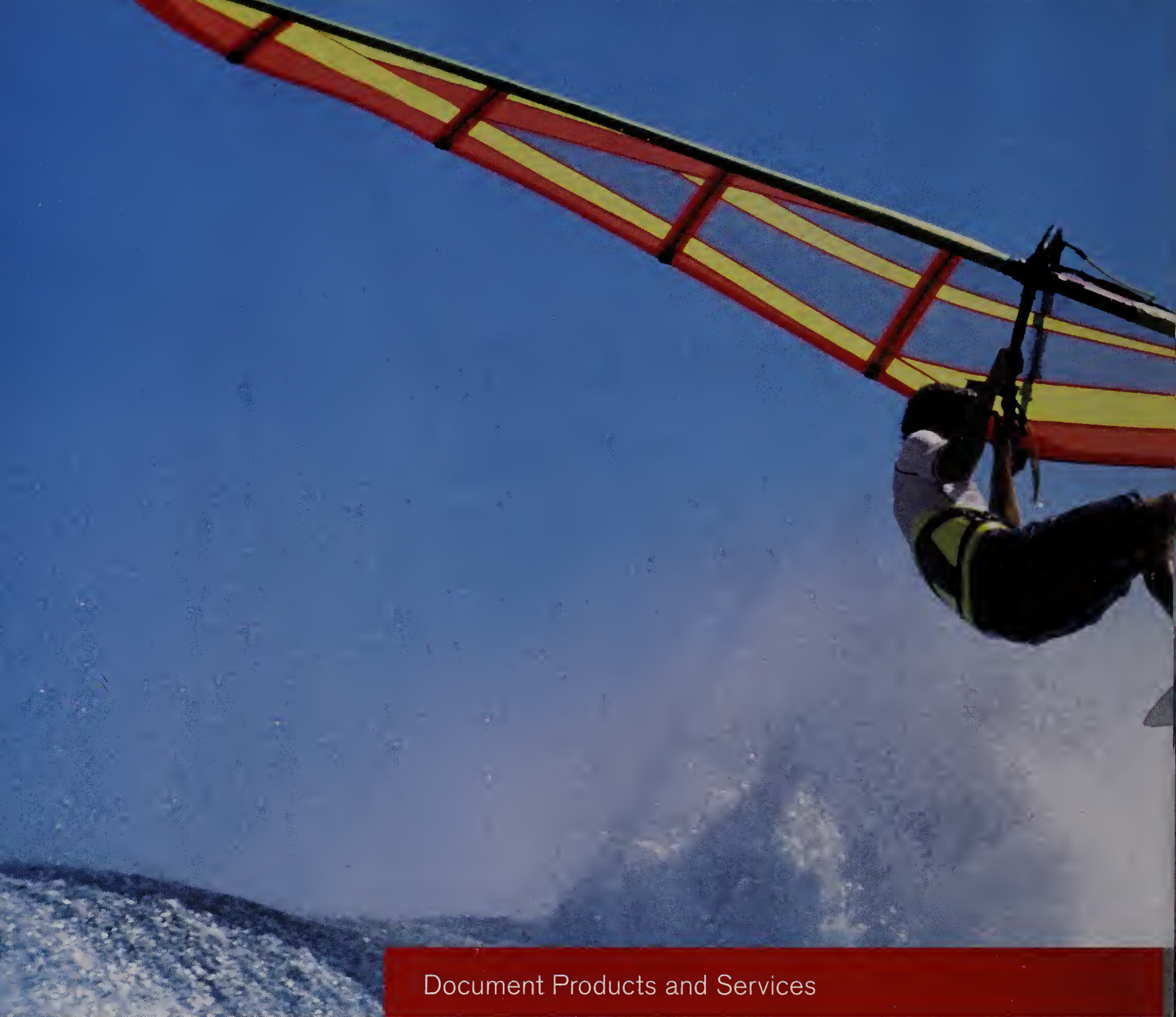
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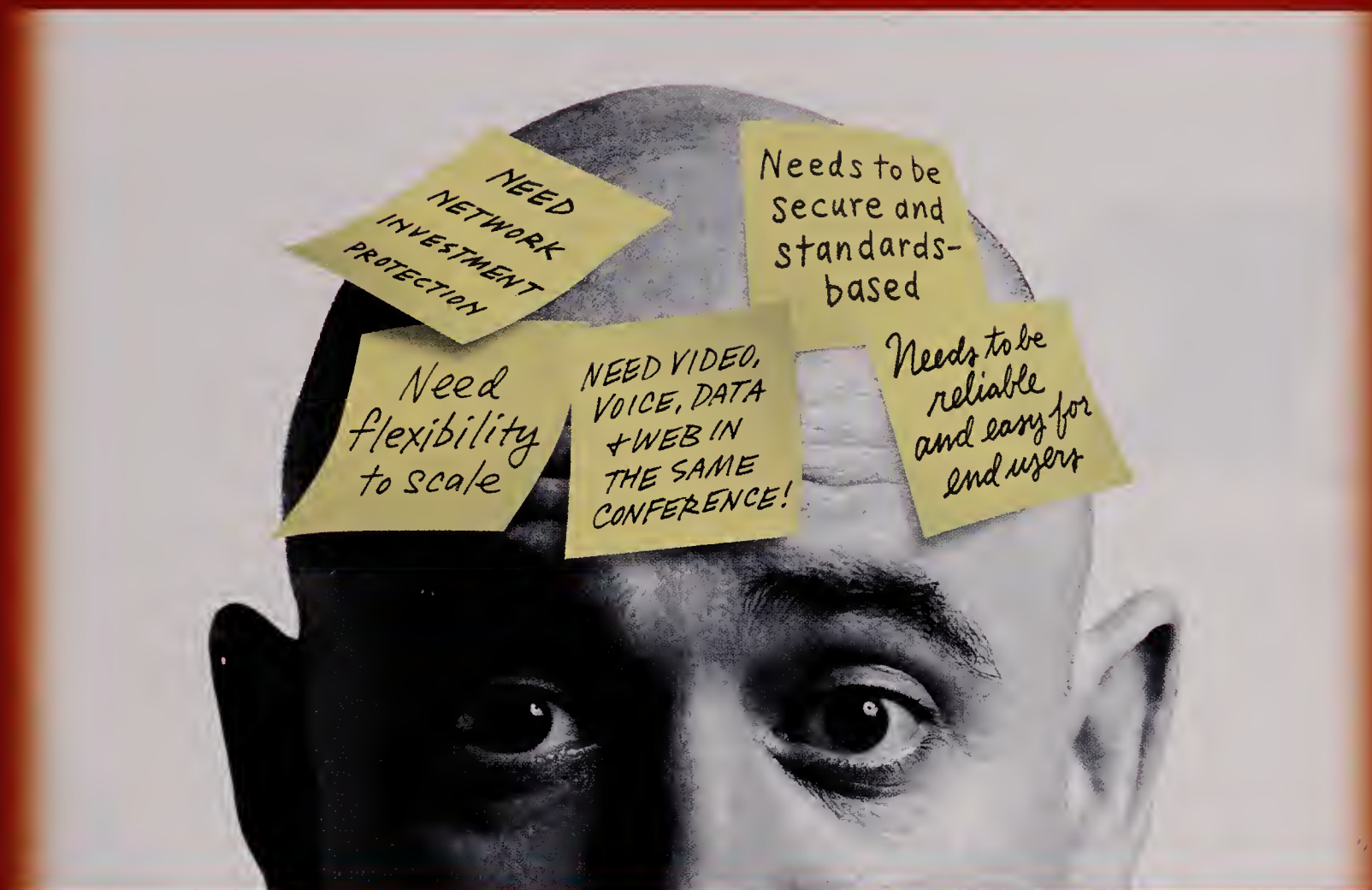
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InBox



VMO Lessons Learned

Susannah Patton presents VMOs as a panacea for managing vendors ("A New Way to Manage Vendors," Feb. 1). Unfortunately, like the initial hype that surrounded offshore development, the truth is not quite so rosy. More than 10 years of experience on both sides of the fence has convinced me that regardless of their intentions, VMOs are ultimately reduced to driving for the lowest-cost vendor in order to justify their value to their company.

I've learned these lessons about VMOs:

- Most lack personnel with the technical experience and expertise to gauge the real skills needed.
- VMOs rarely, if ever, validate claims made by vendors.
- They lack the business knowledge to fully understand the intricacies of a proposed system and the skills needed to successfully develop that system.
- They prohibit vendors from speaking to the actual purchaser or user of the system, thus introducing an artificial layer of abstraction and confusion.

MICHAEL T. LESTER

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Cultivating Your People

I enjoyed "CIO, How Does Your Garden Grow?" in the Feb. 1 issue. Many years ago,

before I obtained my MBA, one thing I learned was MBWA (or management by walking around). While the concept was introduced years ago in *In Search of Excellence*, it is still a valuable tool. To know what is going on in an environment, you have to go into the trenches with your staff, subordinates, clerks—everybody. Being in a pristine office and relying solely on information from your closest advisers or hearsay will not gain complete or exact information in all cases.

You need to get out and show that you care, without forcing it or pretending to care. You have to ask good questions, and you have to listen to the spoken and unspoken words. While the bottom line is important, the people who comprise the human element of an organization are also important. You have to fertilize them as you would your garden (as the analogy goes in the article). If you do so, ROI will grow even further.

PATRICK W. ALLEN

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Building a Foundation

I read your Jan. 15 editorial, "The Story You Won't Find Here," about CIOs' lack of concern about developing and filling entry-level positions. If that is the prevailing sentiment, it certainly poses a challenge for those of us who believe that IT is the engine that powers our economy—from financial services and health care to transportation, manufacturing, education and scores of other industries.

Perhaps the first step is to change the phraseology used to label these jobs. Let's not call them "entry-level" positions. "Foundation-level" is a more accurate term, because the new hires brought on board today are the building blocks that will fill

senior strategic IT roles—including CIO—a few years from now. CIOs who ignore the foundation of their IT backbone are putting at risk the future of their organizations. Ignoring foundation-level IT workers creates the risk of losing the experience, skill and knowledge gained from performing work at each rung of the career ladder. Organizations risk losing core competencies, in-house expertise and future talent. The elimination of many foundation-level jobs may also discourage students from seeking careers in science and technology. The long-term impact of such a trend could be a slowdown in innovation.

Hospitals recruit from the top medical schools to fill first-year residency positions. Law firms search out the best law schools to fill their annual roster of first-year associates. If CIOs view IT as a true profession, why not seek out the best and brightest among graduates from IT training programs and offer them first-year IT generalist positions?

CIOs have fought for many years for a seat at the table where corporate decisions are made. They've demonstrated that technology, when used properly, is a key competitive advantage that can positively affect the long-term growth and success of an organization. But by downplaying or ignoring the importance of foundation-level IT workers, CIOs risk being accused of paying lip-service to their profession.

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Look for the Intelligent Label

RFID U.K. retailer Marks & Spencer (M&S) is taking its ongoing pilot with radio frequency identification (RFID) technology to the next level. Currently, the retail chain is testing the benefits of using RFIDs to track inventory of men's suits at nine stores. Next year, the company plans to extend its effort to 53 stores.

"The feedback so far from our staff has been very positive," says M&S Head of RFID James Stafford. In terms of inventory management,

Stafford says that "what takes up to eight hours a week to do manually can be done with RFID tags in about an hour." In addition, he says, employees have found that the technology is a snap to use; simply waving a scanner over a rack of clothes is sufficient.

M&S began a general test of the technology in 2003 and then moved on to pilot RFIDs on specific items in April 2004. The current trial is only for men's suits but will expand

Marks & Spencer's labels state the purpose of RFIDs. »

to women's clothing, including underwear in 2006, Stafford says.

Why underwear? "We are looking to test RFID with size-complex items, and for bras alone, there could be over 40 sizes," Stafford explains. The extended trial is expected to run through the summer of 2006, after which the company plans to continue

Continued on Page 22



LET YOUR FINGERS DO THE PAYING

MOBILE TECHNOLOGY Some people just can't live without their cell phones. Now a company called Vayusa aims to make cell phones even more indispensable.

With a service called MobileLime, any cell phone can become a payment device. When shopping at participating merchants, cell phone users can pay for their purchases and automatically receive any loyalty-card or coupon benefits. "People don't have to carry coupons or cards anymore," says Bob Wesley, president and CEO of MobileLime, a service of Vayusa.

MobileLime users first have to register their mobile phone number, choose a payment method (credit card, checking account, prepaid account or cash) and create a PIN. They can register at MobileLime's website, by phone or in stores that display the MobileLime logo. At participating merchants, users shop as they normally would. At the register, users tell the cashier they want to "Lime it!" as the cashier rings up the purchase. (Wesley says they don't actually have to say the phrase to get the service, although it is catchy.) Users then dial MobileLime's toll-free number, enter the merchant's ID number and punch in their own PIN to accept the cost of their purchase.

Signing up is free, and users don't incur charges when using their cell phones for MobileLime. For merchants, MobileLime takes care of the back-end processing systems, and while the service isn't free for businesses (merchants pay a subscription fee plus communication costs related to delivering the real-time interactive marketing messages), one merchant says MobileLime's service costs less than credit card transactions. Of the 80 merchants that have signed up for MobileLime, most are restaurants, grocery stores and retailers. Renan Levy, COO of the KaBloom florist chain, says within four weeks of rolling out the MobileLime service in its busy South Station store in downtown Boston, more than 500 customers had signed up for the service. "The customers have a better shopping experience and a faster checkout process," he says. "We also have the opportunity to offer them promotions and communicate with them regarding special deals."

—Thomas Wailgum



PHOTO TOP COURTESY OF MARKS & SPENCER, BOTTOM BY PHOTONICA

I(V), Robot

HEALTH CARE Reducing medical errors while cutting costs is top of mind at most medical institutions. But nowhere is it more critical than at hospitals dedicated to the treatment of children. Unlike adults, children don't receive standard doses of medications. The need for individualized doses requires a labor-intensive (and therefore expensive) process. And because preparation of each individual syringe is a multistep process that involves several manipulations by pharmacy technicians, the potential for human error always exists.

That's why Cincinnati Children's Hospital Medical Center installed a pharmacy robot to automate the preparation of IVs for its young patients. The IntelliFill i.v. system, from ForHealth Technologies, automates the compounding and labeling of approximately 300 IV syringes per hour. The device employs a series of internal accuracy measures, including bar-code scanning and a final weight check, which the syringe must pass before the machine accepts the prepared medication. The bar codes can also be scanned at the point-of-care (POC) to ensure that the patient gets the correct medication—a process that Cincinnati

Children's is currently working to deploy. The POC system can reduce medication errors, which, in turn, leads to long-term cost savings for hospitals.

The IV robot concept was presented to Cincinnati Children's executives five years ago, but the hospital was finally able to install it just last year, thanks to a \$640,000 grant Sen. Mike DeWine (R-Ohio) helped to procure from the Health Resources and Services Administration, an agency within the U.S. Department of Health and Human Services. That grant covered most of the cost of implementation, says Jack Horn, assistant vice president of clinical services and director of Cincinnati Children's pharmacy. Funds for ongoing system maintenance will come out of pharmacy operations.

The robot has been used initially to prepare saline syringes for patients, a fairly simple process involving the same solution in the same amount in every syringe. But even this has resulted in lower costs for the hospital. By produc-

ing the saline syringes in-house, the hospital spends 20 cents less per syringe than it would spend if it purchased them elsewhere.

Still, Horn anticipates the real savings will come when the hospital begins using the robotic system to produce individualized patient syringes. Cincinnati Children's prepares approximately 380,000 IV medications each year, and Horn expects that it can begin using the IntelliFill system to produce a portion of patient-specific syringes beginning this spring pending final clearance from the Ohio State Board of Pharmacy.

The pharmacy robot is just the latest in patient safety improvements at the 423-bed institution. Other efforts include a clinical order entry and documentation system that has resulted in a reduction in medication errors.

—Stephanie Overby

Smart Labels

Continued from Page 21

with additional tests. As of yet, M&S hasn't determined when RFIDs in stores will move from the testing phase to regular use, Stafford says.

With privacy issues a top concern, M&S says its only purpose for using RFIDs is to improve stock-taking processes. The RFID

tags are not scanned at the checkout, nor is any link made between the specific products and customer data such as credit card information. "We don't match personal details to the garment, and we will never be doing that," Stafford says.

In the current trial, the RFID chips are placed inside disposable paper labels. During

the second phase of the trial, the chips will be integrated into the paper bar-code labels M&S already uses to record the size and price of items; the labels will be marked with the phrase "Intelligent Label for stock control" so shoppers are aware of the RFID chip. The company also provides leaflets to customers in the stores that use tags to explain the new technology as well as what M&S does (and does not do) with the information it collects, Stafford says.

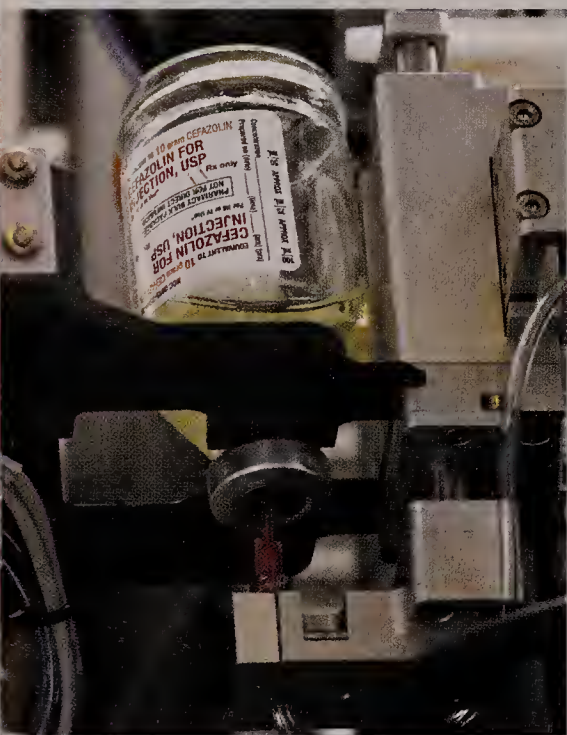
Peter Harrop, chairman of RFID consultancy IDTechEx, says that companies planning to use the technology must conduct trials that show customers benefits, such as well-stocked stores, and address potentially sensitive issues from the outset.

Harrop points to a decision by clothing retailer Benetton to drop its RFID trials after receiving negative reaction to tags placed in women's wear.

Ultimately, says Harrop, privacy issues won't derail the use of RFIDs. "People face more intrusion on their privacy through the use of their mobile phones, which can continuously track their whereabouts, and that hasn't kept people away from that technology," he says. "The main thing that would keep RFID tags from becoming ubiquitous is cost." —Laura Robde



Peter Harrop, chairman of RFID consultancy IDTechEx



Using a robot to prepare IV syringes may reduce both medical errors and costs.

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by the numbers

BY JON SURMACZ

TRENDLINES

The Price of Procurement

Companies that do it right spend more on technology in the short term, but less on overall operations in the long run

Wringing efficiency out of the supply chain could be as simple as investing in technology that will automate operational tasks, such as purchase order processing. That's because smoother supply chain operations can allow companies to shift resources to more strategic tasks—such as sourcing—where they can find even more value, according to the Hackett Group.

In its latest "Book of Numbers" report, Hackett states that companies with world-class procurement operations spend \$1.4 million per billion of their overall procurement spend (the goods and services a company buys to do business) on technology, while average companies spend \$1.1 million per billion of spend. (The Hackett Group defines "world-class" as those companies that achieve the highest scores in its measures for efficiency and effectiveness that take into account cost and productivity, and quality and value respectively.)

According to Hackett, world-class procurement organizations spend \$7.4 million on procurement operations for every \$1 billion of goods and services they buy. Average companies, on the other hand, spend \$10.1 billion on procurement operations for every \$1 billion of goods and services they buy. So even though world-class companies are spending more on procurement technology (in terms of dollars and as a percentage of procurement operations), their overall spending on procurement operations is actually less.

By automating operational processes in the purchase-to-pay cycle (processing of purchase orders, receipts, requests for quote and so on), world-class companies are able to focus resources and savings on strategic business operations, says Christopher Sawchuk, senior business adviser at Hackett. "The value of these [automation] investments is in cost reduction," he says. "The savings allow procurement executives to spend a larger percentage of their budget on decision support rather than operational support and focus on aligning procurement with business strategy."

Decision-support tools can help executives determine who their best and worst suppliers are so that they may adjust their procurement plans accordingly.

Best Practices

1] Identify operational processes (payment processing and the like) that can be automated with e-procurement and e-sourcing tools and invest in those technologies.

2] Educate employees and business partners about the benefits of new procurement systems to ensure that they are used. Christopher Sawchuk, senior business adviser at the Hackett Group, says procurement executives should track how many transactions are going through the e-procurement system as an indicator of usage.

3] Shift into strategic mode once the return on automation investments is realized. This may mean investing in decision-support technologies, hiring staff with more sourcing experience and expertise, or both.

World-class procurement organizations invest more of their total operations spending on IT.

World-class: 19%
Average: 11%

World-class companies allocate **36%** more of their overall procurement resources to decision support and risk management activities.

Elevated IT spending helps drive down costs...

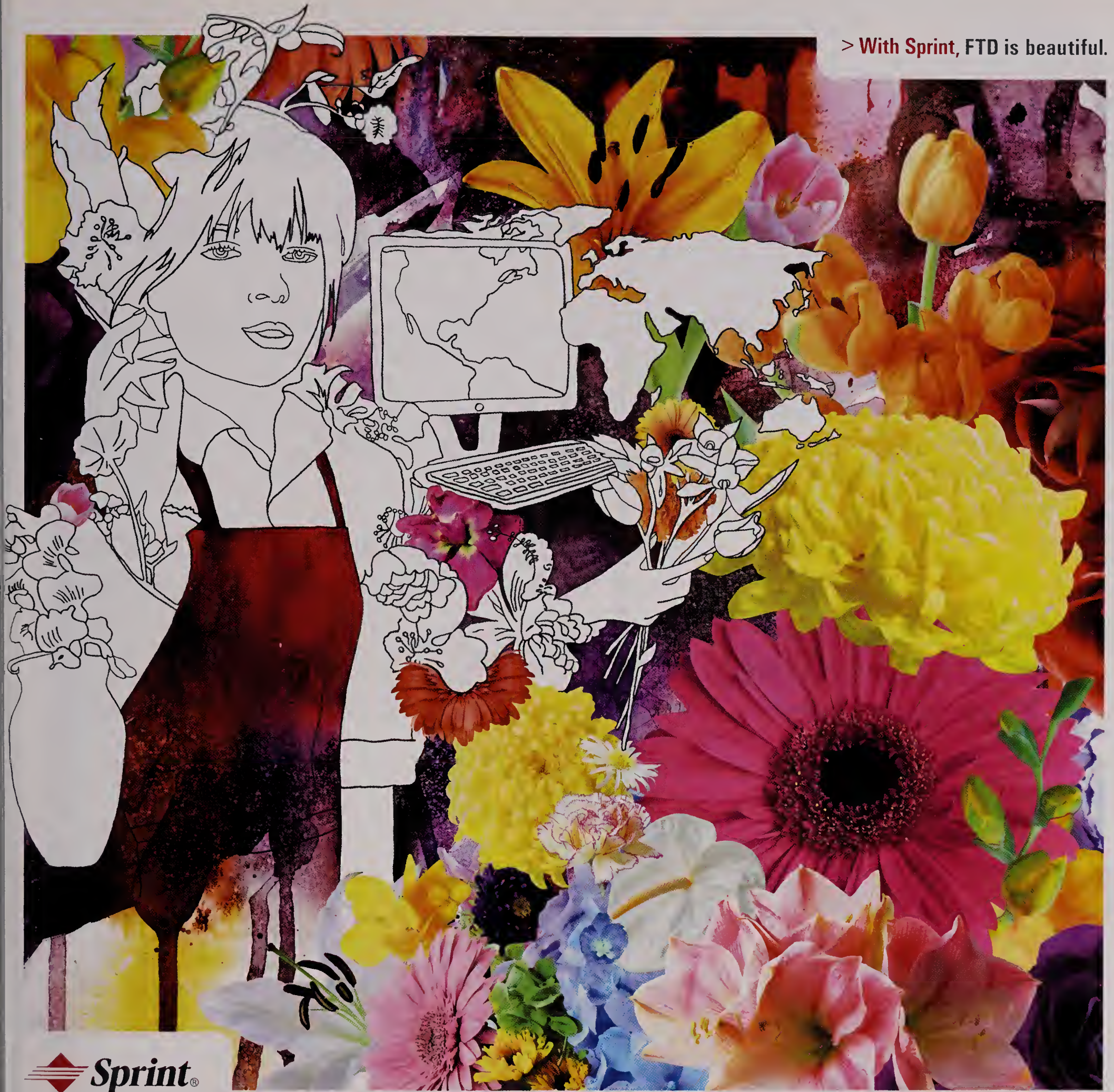
Cost per purchase order:
World-class: \$8.54
Average: \$19.99

...so companies can focus on strategic operations.

World-class companies spend **27%** more on procurement technology than average companies, but they spend **27%** less on overall procurement operations.

World-class companies rely on **38%** fewer staff members than average companies, resulting in a price tag for total procurement operations that's **27%** lower than average.

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WHO SAYS THERE'S NO FUTURE FOR I.T.?

CAREERS In an online poll sponsored by Junior Achievement, 1,065 students were asked, What is your ideal career? For the fifth year in a row, students ranked a career in the "computer field" among the top 10 choices. Overall, **5%** of the respondents wanted to pursue a computer career (at **9.7%**, "businessperson" was the top choice). The computer field proved more popular with boys: **7.4%** of boys ranked the computer field as first among their career choices, while **2.1%** of the girls did so.

SOURCE: 2005 JA Interprise Poll, "Kids and Careers"

The World's 10 Biggest Data Warehouses

What's in a data warehouse? Apparently, quite a lot, based on a 2004 research report from Winter that identified the largest data warehouses on the planet.

Organization/Data warehouse size (GB)/Vendor

- 1 France Telecom/29,232/Oracle
- 2 AT&T Labs/26,269/AT&T
- 3 SBC/24,805/Teradata
- 4 Anonymous/16,191/IBM
- 5 Amazon.com/13,001/Oracle
- 6 Kmart/12,592/Teradata
- 7 Claria/12,100/Oracle
- 8 Health Insurance Review Agency/11,942/Sybase
- 9 FedEx/9,981/Teradata
- 10 Vodafone/9,108/Teradata

SOURCE: Winter's TopTen Program

washingtonwatch

EDITED BY ELANA VARON

TRENDLINES

Feds OK IBM Sale of PC Unit

More scrutiny ahead for business with China

THE FEDERAL GOVERNMENT approved IBM's sale of its PC division to the Chinese company Lenovo, but the investigation that preceded the decision indicates U.S. companies will face hurdles if they want to sell assets to China.

The Committee on Foreign Investment in the United States (CFIUS), a government body that must approve the sale of U.S. companies to foreign interests, gave the deal its blessing March 8. In January, three members of Congress—Reps. Duncan Hunter (R-Calif.), Henry Hyde (R-Ill.) and Don Manzullo (R-Ill.)—held up the sale by requesting a full investigation into its national security implications. They wanted to make a point: Although China is part of the global economy, it's still a communist country and, they argue, an enemy of the United States. The Chinese

government is Lenovo's largest stakeholder.

The argument that PCs are vital to national security rings hollow, says William Reinsch, who was in charge of export control policy during the Clinton administration. Most laptops are made in China anyway, he notes, and if the Chinese want to reverse engineer the systems, place bugs or surreptitious monitors in them, or withhold shipments in a supply chain strike, they are already in a position to do so. Nevertheless, adds Reinsch (now president of the National Foreign Trade Council, a business group),



Rep. Don Manzullo (R-Ill.)

the inquiry demonstrates that acquisitions of U.S. intellectual property by Chinese companies will be subject to more scrutiny in the future.

Manzullo, who is chairman of the House Small Business Committee, isn't completely satisfied. He wants to expand CFIUS's responsibility to cover economic security, not just military or strategic threats. In the case of Lenovo, says Manzullo's press secretary, Rich Carter, "We are turning Lenovo into the third-largest computer maker in the world." Manzullo has complained that China doesn't abide by global trading rules.

Wharton School Professor Marshall Meyer downplays the national security risks, but says CIOs might think twice about doing business with Lenovo anyway. Lenovo is losing market share to Dell in China, and the IBM business unit it acquired, while prestigious, has lost money in the past few years. Meyer worries that customers could be hurt if the economics of the deal don't work out.

—Ben Worthen

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Moral Courage: Taking Action When Your Values Are Put to the Test

By Rushworth M. Kidder
William Morrow, 2005, \$24.95

More Action, Less Talk

A page-turner about moral courage? Believe it.

BOOK REVIEW If you're lucky, there's been at least one teacher in your life whose lectures kept you so enthralled that you forgot to take notes. Or maybe, even just once, you've been entertained by a storyteller who does all the voices perfectly and keeps you hanging onto the edge of your seat, waiting to hear what happens next.

Rushworth M. Kidder, the author of *Moral Courage: Taking Action When Your Values Are Put to the Test*, is the founder and pres-

ident of the Institute for Global Ethics. In his latest book about ethics (*Shared Values for a Troubled World* and *How Good People Make Tough Choices* are his previous titles), Kidder shows himself to be both a preeminent teacher and a teller of tales extraordinaire.

In his role as instructor, Kidder methodically gets readers from point A to point B to point C. He discusses, for example, how his and others' research has shown that despite every possible human difference—culture, ethnicity,

race, religion, gender, politics, economics and education—"morality" is defined everywhere as encompassing the following five attributes: honesty, responsibility, respect, fairness and compassion.

Throughout the book, Kidder effectively explains that morality isn't just a question of right versus wrong; an individual needs to balance personal principles against often conflicting outer forces. For example, what happens when truth gets in the way of loyalty? Or justice conflicts with mercy? In addition to food for thought, Kidder also imparts practical advice in the form of a "moral courage checklist."

Kidder enlivens his material with stories, the kind of thrilling and heartrending tales that might be told around a campfire. Morally courageous decision making, Kidder writes, requires a sense of trust that good will flow from holding to a principle, even if the immediate outcome is a personal setback. In his chapter "Learning Moral Courage," Kidder quotes Aristotle: "We become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts." And that's the theme of this thoughtful yet challenging book: Moral courage is the motor that will get you from talking about ethics to acting ethically. —Carol Zarrow



The Grand Road Ahead

I.T. PREDICTIONS Many challenges you're dealing with today as a CIO could pale when compared with what's in store for IT down the road. Some British computer scientists have proposed a number of so-called Grand Challenges for IT that they hope will propel computer science research into the future. A report released by the British Computer Society (BCS), outlines seven Grand Challenges; goals that are established one to two decades in advance and, when achieved, represent a major milestone in terms of advancing knowledge or technology. While some of the challenges have commercial value, (most notably, the development of dependable systems), others (such as creating adaptable computers modeled after biological systems) seem like science fiction.

A few of the more ambitious challenges should keep researchers busy for years to come.

In Vivo-in Silico (iViS): Through the Human Genome Project, IT has already advanced the life sciences, but the next step is to create computer simulations of entire living organisms. The goal, says the BCS, is to give scientists the opportunity to examine a plant, animal or colony of cells in virtual reality—from the cellular scale on upwards—and at different speeds, from freeze-frame to faster than life.

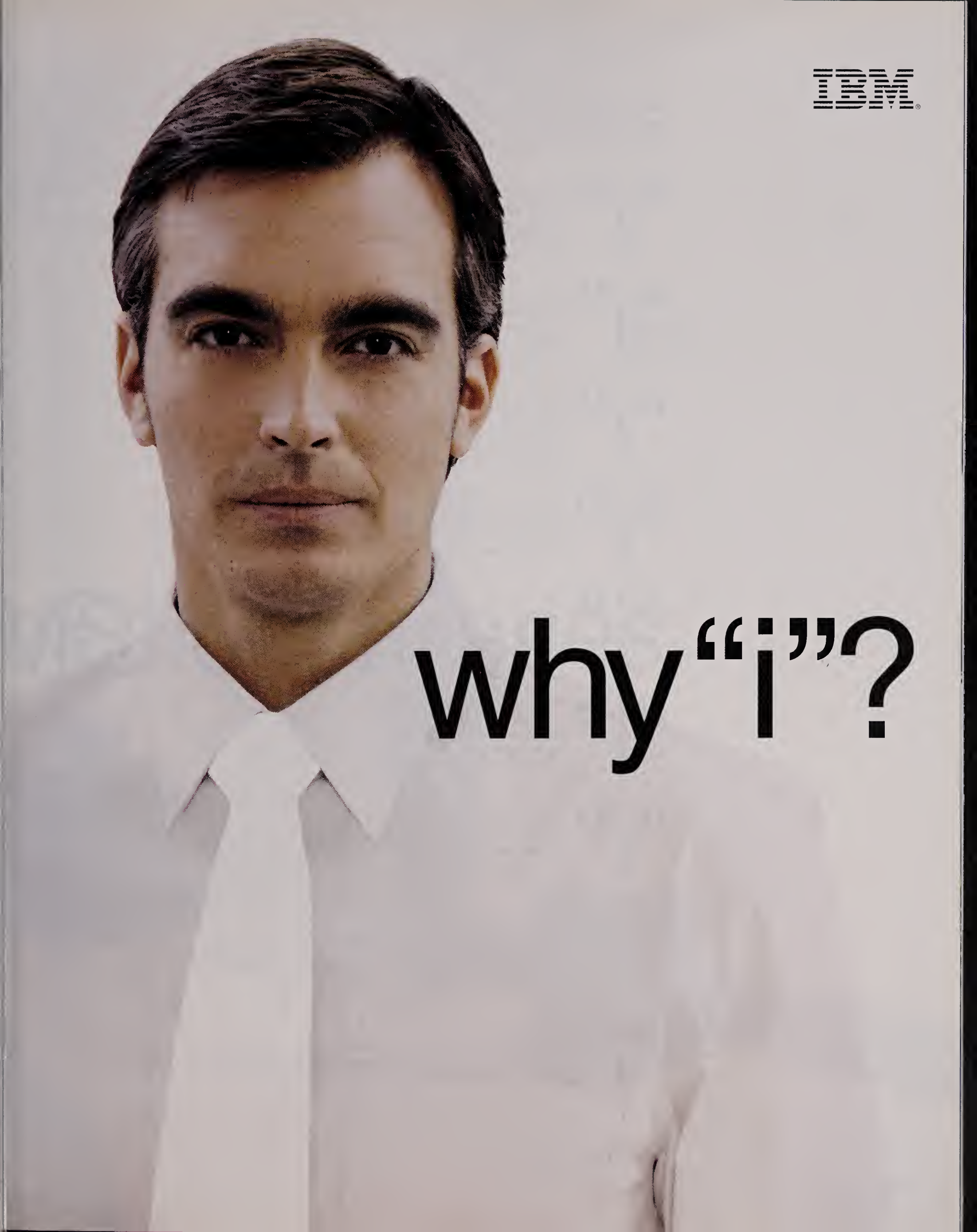
Science for global, ubiquitous computing: If you can't live without computing devices such as cell phones, laptops and PDAs, you will appreciate the challenge posed by global, ubiquitous computing. While computing devices can play well with others in theory, failure often occurs in practice because software interacts in unexpected ways. The goal for researchers is to develop a scientific basis for the design and engineering of a global computing infrastructure so that devices work as they are intended.

Memories for life: As we accumulate personal digital memories such as e-mail and photos, it will become necessary to manage all that information. The challenge confronting computer scientists is how to allow people to benefit from—and enjoy—these auxiliary memories while maintaining their privacy.

Dependable systems evolution: To build dependable computer systems, scientists suggest building a verifying compiler, a tool that automatically proves a program is correct before allowing it to run—something that could eliminate bug-prone software.

To see the full report, visit www.cio.com/041505.

—Peter Sayer



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as in instant.

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as in the IBM

“i”

as in ideal.

Bank Mandiri, in Indonesia, needed to simplify their systems after merging with four different institutions. Now a single iSeries 840 handles nearly seven million accounts at 788 branches.

“i”

as in impressive.

The Asian Art Museum, in San Francisco, simplified business operations, increased staff productivity and enhanced the overall visitor experience with the help of iSeries servers, which will be remembered throughout the ages as helping keep operation costs low.

“i”

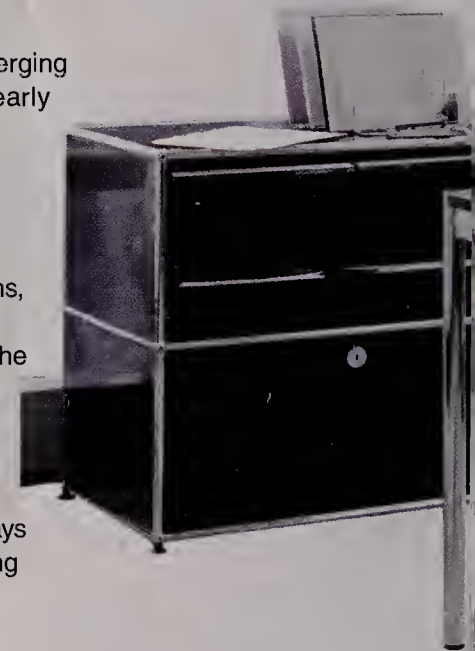
as in incredible.

GHY International, an international customs and trade services group, says their iSeries server running the Linux® operating system is a compelling alternative to the cost and complexity required to manage multiple stand-alone servers.

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Get on Board

Be a better IT leader by walking in your customers' shoes



ILLUSTRATION BY NOAH WOODS

I taught my twin sons to play football. Today they are sophomores in high school, playing on a nationally ranked team that recently won the Texas state championship. I haven't coached them for years, but they still look to me for leadership. Their need for guidance requires me to understand their environment. I have to get to know their competitors, to understand what the other fans and coaches are saying and doing. And I have to work hard to keep up.

These same principles apply when it comes to solving our companies' business problems. Once we get beyond the initial implementation of a system, we need to stay abreast of how each system is being used in order to be relevant as business leaders. We have to get out of the office and into the field to keep informed about what employees and our external customers are thinking, as well as what they need.

The experiential approach to application development and technology implementation is certainly not new; however, keeping up-to-date with what is going on with both customers and employees is becoming increasingly difficult. Technology development cycles are shrinking, and the pace of change in American industry is getting faster. Every aspect of business is becoming more global, and the role of the CIO is evolving. All of this is happening at the same time.

American Airlines has 80,000 employees who manage 4,300 flights a day for 90 million customers. If I am to use IT to provide more value to the customers, I have to add value for the employees as well. The better I can understand the technology needs of the employees, the more value I can provide. New problems, new requirements and changes to the overall work environment that occur over time dictate that I continue

to get into the field. Meanwhile, as a representative of the executive leadership team, I have an opportunity to reinforce the goals and objectives of the company, dispel rumors and answer questions about what is going on at headquarters.

The Value of Field Experience

Back in November, I tried to better understand what our 19,000 flight attendants do by working as a flight attendant on a few flights to and from Dallas and the West Coast.

I was pretty sure I knew what flight attendants do. I was a frequent flier prior to joining American, and I've been flying a lot since then as well. The opportunity to work as a flight attendant on a few trips taught me otherwise. My understanding of what the IT group needs to build to help this group of employees do their jobs better is different than what I would have thought before working in this group.

For example, the kind of application I suspected would be most beneficial for managing the inventory of food and beverages on board did not take into consideration the diversity

is definitive—that what you see happens all the time. To make sure your experience serves as an effective reality check, it pays to prepare thoroughly.

Determine what you want to accomplish prior to setting foot outside your door. Design your visit with help from knowledgeable people in the organization to make sure you won't just be in the way and that you will get information you can use. Before I did my stint as a flight attendant, the in-flight services team helped me prioritize what I wanted to get out of my visit—including a better understanding of the sequence of tasks that must be completed during a flight. They also made sure I wouldn't hinder the work of the professional flight attendants or compromise safety. I worked in both first-class and coach, assigned to jobs that allowed me to experience the full range of interaction with customers.

A prepared script comes in handy at this point, because it keeps you focused. The script should include questions to get answers to, as well as information you want to impart while visiting that particular operation.

What I learned during my brief tenure as a flight attendant will change the way we gather the key requirements for future systems.

there is in catering operations on different flights. I also learned there is a big difference in how the forward and aft cabins are managed on different aircrafts. What I learned during my brief tenure as a flight attendant will change the way we approach any IT projects we do for the in-flight services department.

In addition, I now have a much better idea about how we should go about gathering some of the key requirements for future systems. When I asked flight attendants about what they needed, I was surprised that they told me not about their requirements but about what customers wanted. So next time we scope out a new system, we'll focus more on what customers need flight attendants to do.

Another example: My team is in the middle of a computer roll-out that will replace all the desktop systems in the company. We are finding that there is no substitute for managers going to deployment sites to view what is going on. These visits have provided insights into issues that would have cropped up later, such as how much heat was being disseminated from the CPU in its enclosure. These are minor problems, but taking the initiative to identify them contributes to the project's success.

Depositing information while out in the field is just as important as getting it. CIOs have enough credibility as members of the senior management team to answer employees' questions and give information about current business problems or their possible solutions—including information about subjects that are not IT related. Therefore, it is important to make sure that your script includes information that you want to make sure to impart when you leave. Before I took off as a flight attendant, I made sure I was up to speed on all the flight attendants' issues, such as our route scheduling plans.

Now, Get Going

There's no formula for getting out of the office. For me, an ad hoc system works best. Whenever there's something about our operations that I don't understand, or haven't checked out in a while, I get on the road.

Of course, there are a million excuses for staying at the office: The budget is due this month; that major system is rolling out next quarter. It's easier not to get away. But if you're serious about adding value as a leader, you have to make the commitment to get in the end user's and the customer's shoes. **CIO**

Opinions, Please

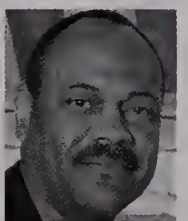
Do you have a strategy for interacting with end users and customers? Go to the online version of this column to **ADD A COMMENT**.

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Monte Ford is senior vice president and CIO of American Airlines. Send feedback about this column to leadership@cio.com.



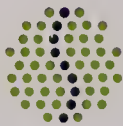


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Ignoring the Obvious

You have to know what questions to ask about your business before you can install a successful IT system. Just ask the FBI.



Lucky me. I received a phone call from an obscenely rich organization that genuinely believed that the best way to solve a problem was to throw a lot of money at it. They wanted “world class.” And I was hired to help them get it.

The challenge? This financial services company wanted to dramatically improve the quantity and quality of collaboration within its enterprise. Top management had decided that collaboration was to be their new core competence. I was to recommend the best software, systems and apps for achieving this. No expense would be spared in procuring that technical infrastructure. A “smart” client with money to burn—what an opportunity!

I could barely keep the drool from dribbling down my chin. This would be the client that would pay for my children’s Ivy League educations. And I don’t even have children.

Then, I made the mistake of asking the obvious question: How does the business share information and collaborate now?

Don’t really know, don’t really care and doesn’t really matter, said my client dismissively. You’re not here to diagnose our current behaviors; you’re here to help us implement our vision of the collaborative future. We need you to make sure we buy the best collaborative technologies in the world.

Of course, I could have taken both the hint and the (lots and lots of) money. Alas, I had to ask the follow up: What other C-level initiatives is the company taking to assure that this cultural transformation to collaboration will work?

The client’s eyes rolled: We’re signaling our commitment to collaboration by our huge investment in this world-class collaborative infrastructure. We’re telling our people to collaborate. This investment removes the technical obstacles that keep them



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Not good. The client could not—would not—give real answers to obvious questions. They hadn't even thought about them. Even worse, these questions had obviously annoyed them. A lot. They now promised to get back to me. I knew they never would. And they didn't. That night, I cried myself to sleep. No Harvard, Yale or MIT for my (virtual) kids. Unlucky me.

Of course, the collaboration initiative went nowhere. Tens of millions of dollars were wasted—and none of it on me. In truth, the company possessed a spiteful, ruthlessly competitive culture that thrived on political infighting and cutting ethical corners. Management cared most passionately about the size of the annual bonus and behaved accordingly. Between the Securities and Exchange Commission's investigations and incessant executive infighting, its best clients scattered. The company was acquired within 18 months of my failed dream of consulting riches. Can you say *schadenfreude*?

This column is about managing the obvious. Too many C-level executives and their direct reports don't ask the simplest, most fundamental, most essential questions about what they're trying to accomplish. It's as if the obvious is taken for granted.

A Culture of Complacency

When I look back on my last dozen engagements—heck, when I look at any five issues of *CIO*—it's not the nuanced, subtle or unexpected issue that typically derails that mission-critical implementation; it's a predictable problem that's freakin' obvious. Even worse, everyone knows it's obvious.

Why don't senior-level executives do obvious well? Because the obvious is, well, so obvious. If I'm really smart, I know the obvious. Been there, done that. That's what smart means, right? Consequently, please give serious consideration to what I modestly call "Schrage's Law of Organizational Obviousness": The smarter the organization thinks it is, the more complacently it manages the obvious.

In my experience, the complacency of "smart" managers is the greatest source of IT failure. My current favorite example of this is the brouhaha that's surrounded the FBI's failed Virtual Case File (VCF) software. This system was supposed to make it easier for the nation's counterterror law enforcement agency to collaborate and share information. The \$170 million program—trust me, it's cost more—and prototype is a widely acknowledged mess. And the FBI's failure has hurt our domestic security.

Was the FBI's VCF program too ambitious? Too innovative?

No. Those are highfalutin words to cover up the shameful truth. "Smart" people at the FBI and its vendor didn't even ask the obvious questions, let alone answer them. For example, the FBI never addressed how its agents currently used technol-

The FBI and its vendor didn't ask the essential questions about how the agency currently uses technology to manage its cases.

ogy to manage their cases, and how the new software would modify and improve that process.

Why not? One computer analyst who has studied the FBI's technology efforts told the *Los Angeles Times* that the agency's problem is that FBI officials thought they could get it right the first time. "That never happens with anybody," he said.

Nasty congressional hearings revealed a design and development process utterly divorced from how the FBI actually deployed and used software in the real world.

Needless to say, Science Applications International, the VCF vendor, told Congress and the media that the FBI was changing the specs all the time. Are you surprised? Everyone reading this magazine knows that endlessly shifting specs is the surest symptom of a client who is going to discover the obvious the hard way. The point is not to proffer sympathy to an incompetent vendor; it's to excoriate both sides for spending over \$170 million on software designed to foster collaboration in a bureaucracy plagued by fiefdoms. Complacency, not complexity, explains the failure.

I've lost count of the number of organizations I've gone into where senior-level executives can't answer the most critically obvious questions about their business. For example, sales and marketing executives who can identify their top 10 revenue accounts but don't know the 10 most profitable. Supply chain managers who can't tell how last-minute design changes affect key economics. Departmental managers who can't describe the processes they've implemented to run their functions.

Does that make them incompetent? Of course not! But it is impossible (not unlikely, impossible!) to design and implement cost-effective CRM, supply chain management and process management systems without learning such obvious information. IT executives who feel otherwise don't understand either the business meaning or design implications of the obvious.

Knowing, grasping and even celebrating the obvious should be the single most important spec in every IT initiative. The CIO's great sin is leading as if the obvious is second in importance, behind the complex, the nuanced and the unknown.

Think you're managing the obvious well? Ask around. You may well be breaking Schrage's Law. If so, you'll pay big-time. Now, that's obvious. **CIO**

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PHOTO BY JOHN SOARES

Add a Comment

Is an attitude of complacency freakin' obvious in your company? And if so, what are you doing about it? Share your hard-earned wisdom with Michael Schrage. Find the comments box on the online version of this article. Go to www.cio.com/041505.

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The Resource for
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Part of the **CIO Leadership Agenda** series

How Toyota's CIO radically restructured her entire approach to IT and regained the trust of the business

BY THOMAS WAILGUM

the
big
fix

PHOTO BY DANIEL HENNESSY



At Toyota Motor Sales

USA's headquarters in Torrance, Calif., there's a circular patch of manicured earth that separates the IS building and corporate headquarters. A brook winds its way through lush flowers and pine trees, and a terraced path connects the two buildings.

For many years, this was about the only thing the two groups shared with each other.

For the business execs at Toyota Motor Sales (TMS) peering across the courtyard at the Data building, the deep black windows were a symbol of IS's opacity. These executives felt that IS was unresponsive, and they had little clue where the money was going. "One of the complaints was that we spent a lot of money on IT projects, and [the business] was frequently disappointed with the results," recalls Bob Daly, group vice president of Toyota Customer Services. Daly says badly handled projects—such as a delayed PeopleSoft ERP implementation and a protracted parts inventory initiative—led to finger-pointing between the two factions.

Reader ROI

- :: Why Toyota's business side hated its IS department
- :: How Barbra Cooper came up with a plan to save IS
- :: How IT changed its stripes without layoffs or great angst



By late 2002, **Barbra Cooper**, CIO of Toyota Motor Sales USA, realized that if she wanted to win back the respect of the business, she would have to make some radical changes in the way IT worked with the business.

Meanwhile, behind the darkened windows of the Data building, Barbra Cooper's IS staff was buried under the weight of six enterprisewide projects and could barely keep their heads above water. Called the Big Six, they included a new extranet for Toyota dealers and the PeopleSoft ERP roll-out, as well as four new systems for order management, parts forecasting, advanced warranty and financial document management. Feeling besieged, the IS group made the mistake of not explaining to the business all the things it was doing and how much it all cost. It was a classic case of mismanaged expectations and fractured alignment.

By late 2002, Cooper realized that if she wanted to win back the respect of the business—and remain in her post—she would have to make some radical changes. A conversation with

As the division information officer for Toyota Customer Services, **Karen Nocket** works closely with **Bob Daly**, group VP of Customer Services, to explain what IS is doing for the business side, and to help calm the waters when critical IS systems go down.



Toyota Motor Sales' CEO, in which he questioned the sharp incline of IS's spending curve, stopped her in her tracks. In her 30 years in IT, Cooper had developed something of a reputation for coming in to clean up other CIOs' messes. Now, she had to take a long look in the mirror and fix herself. And in the summer of 2003, that's exactly what she set out to do.

This is the story of how Cooper completely upended the structure of Toyota's IS department in six months in a bid to weave IT functions more closely into the daily business operations. The process was painful: She changed IS employees' jobs, exposed all of IS's shortcomings and forced her staff into the business offices. But just over a year into the new plan, IS and the business are now standing shoulder-to-shoulder when planning and implementing IT projects. And Cooper is still CIO of Toyota Motor Sales.

The Bad Old Days

When Cooper joined Toyota Motor Sales in late 1996, her reception was lukewarm. She was an outsider in a company that prizes employee loyalty. Employees with "only" five years of experience, including CFO Tracey Doi, call themselves "newbies."

Cooper was surprised to find that IS was so isolated and primitive. "I would describe it as almost 1970s-like," she says. Business units were buying their own IT systems because in-house IT couldn't deliver. There were no PCs or network management. And basic IT disciplines—such as business relationship management and financial management—were largely absent. "No one understood the cost of delivering IT," she says.

The little face time that IS did have with the business managers was more in an "order taker" role rather than a "let's build the solution together" partnership. Relationship managers Cooper inserted in each business unit were powerless to effect any real change.

Worse, business execs cut deals with their go-to guys in IS for project approval and funding, with no thought to architecture standards, systems integration or business benefits. "Every creative person around here went running with their list of their ideas to their key IS contact who they knew the best," recalls Doi.

Before Cooper could rectify the situation, she found herself and her staff buried under the Big Six technology projects. And Cooper's senior managers seemed to have free rein to do

those big projects with an open checkbook. When asked how his new job was, Ken Goltara, whom Cooper hired in 1997 as corporate manager of business systems, recalls saying at the time, "It's great. People never ask me how much things cost; they only ask me when I'm going to get it delivered. That's the only thing people care about."

On the business side, Toyota Customer Services' Daly says that most projects started out with vague statements about what the new system would do. And then, they were disappointed when the project didn't quite meet their (often unarticulated) expectations. Jim Farley, who was working as the Midwest general manager of Lexus in 1999, recalls the anxiety around the Dealer Daily initiative, an extranet designed to allow Toyota and Lexus dealers to interact with headquarters, factories and other parts of the company, as well as fully integrate with the dealer management systems. The Lexus dealers were anxious because the earlier rollout for the Toyota extranet had not gone well. IS did not sufficiently train the dealers on how to use the new system, so naturally they had problems with it.

"We were all so nervous," Farley recalls. "As much as people [in the dealerships] hated the old system [an AS/400 satellite-based system], they were pretty scared about" the new initiative. As it turned out, Farley says, IS heeded the lessons it learned on the Toyota rollout, and the rollout for Lexus extranet in 2002 went much more smoothly.

The Big Squeeze

Starting in 2001, Japanese executives were feeling squeezed because of a tanking domestic Japanese market and lukewarm results from its global units. Toyota Motor Sales USA, though, had increasing sales and market share. Japan needed to rely more on its American division's profits, and from across the Pacific, the parent company started to look more closely at U.S. spending habits.

All domestic departments soon felt pressure from senior management. IS, in particular, was a black box for the executives. "They hadn't a clue on technology," Goltara says. "They just knew it's this big thing."

Both Japanese and U.S. management wanted to know more about IS's runaway costs, which had doubled after Cooper's arrival and, at its peak, tripled. And Toyota Motor Sales President and CEO Yuki Funo wanted Cooper to tell him where the ceiling of IS's spend was.

Executives were saying, "Is everything in IT this size and this much of a challenge? My God, that's a lot of money," Cooper remembers.

Meanwhile, she could no longer ignore the distant rumblings from across the courtyard that had worked their way down into the

Cooper had developed something of a reputation for cleaning up other CIOs' messes. Now, she had to take a long look in the mirror and fix herself.

rank-and-file business staff. To them, IS had become an unresponsive, bureaucratic machine.

So Cooper started soliciting informal feedback from a wide range of businesspeople. What she discovered was an accumulation of "very painful projects for both IT and the business," she says. "Clearly there was not enough communication and education on our part."

In late 2002, Cooper hired an outside consultancy to interview TMS's top 20 executives. She wanted their honest opinions of how IS was doing. The results didn't provide all the answers to IS's ailments, but she certainly saw the hot spots. "Parts of [the survey results] were stinging," Cooper says. "But you can't be a CIO and not face that."

That Vision Thing

Cooper speaks in a measured cadence with a Midwestern twang that is actually a blend of accents picked up from her nomadic youth as a military brat. You get a sense that every word that comes out of her mouth has been precisely chosen.

There's a carefulness about her. She's also a voracious reader. Her staffers say she is always dropping business magazine articles on their desks and forwarding them e-mails on important IT research.

So no one was surprised when Cooper spent many introspective weeks in 2003 formulating her vision for a new IT department. What she developed was a strategy for a decentralized and transparent IS organization that focused all of its energy on the major business segments.

In summer 2003, she called her senior IS staffers into her conference room and presented her vision on her whiteboard. Some of the managers were excited by the prospect of change; others were less so. "I didn't like it," recalls Goltara. Cooper says she was not surprised by Goltara's visceral reaction. "But it was clear that

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[his job] was not a sustainable role," Cooper says. Goltara's job as head of all applications and software "was an inch deep and a mile wide," Cooper says, meaning he had too many business-side constituents to serve and too little time to do that.

The first thing Cooper did was set up the Toyota Value Action Program, a team of eight staffers responsible for translating her vision into actionable items for the department and her direct reports. Using the executive's survey results and Cooper's direction, the team winnowed the list down to 18 initiatives—including increasing employee training and development, gaining cost savings, making process improvements, ridding IS inefficiencies and implementing a metrics program (see "Metric Heaven," this page). Each initiative got a project owner and a team. Cooper insisted that each initiative have a mechanism to check its success.

they sit on the management committees headed by top business executives. The DIOs' goal is to forge relationships with tier-one execs (Daly, for example) and tier-two execs (VP-level).

The DIOs weren't alone, though. Business operation managers and relationship managers from IS sat alongside the business folks. "I still believe in managing IT centrally, but it was incumbent on us to physically distribute IT into the businesses," says Cooper. "They could provide more local attention while keeping the enterprise vision alive."

The difference between the previous relationship managers and the new DIOs is that DIOs have complete accountability and responsibility for the vertical area they serve. Goltara, for instance, now heads up a smaller group of internal customers—which includes Toyota, Lexus and Scion—as well as all of the vehicle ordering systems, logistics and dealer portals. "I now have more vertical responsibility, and my responsibilities are deeper, from cradle to grave," Goltara says. "From Toyota to Lexus to Scion, I'm it."



metric heaven

A digital dashboard supplies Toyota's business executives with vital statistics about IT

As one of many pain points, the Toyota Value Action Program team identified a strong need for metrics, since there were no formal metrics processes within IS. So Deborah West, who became the metrics business manager during the restructuring, developed a digital dashboard that now illustrates four key areas of the health of Toyota Motor Sales' IS: new investments (project scope, time line, budget and quality), operational performance (how IS is doing on day-to-day activities), financial performance (monthly burn rate of dollars) and workforce management (HR and people aspects). Every metric, however, is specially tailored to the business and put into terms the business understands. The online dashboard is available to all managers, and numbers are updated monthly. "The divisional information officers work with the business managers to help them understand what they are spending their money on," West says.

Another Web-based tool, called Management Financial Reporting, also allows the business to see graphical trend reports on IS projects, forecast reports, variances in IS department costs, fiscal year budgeting reports as well as other financial data on IS department activities.

—T.W.

A Little Kicking and Screaming

Change can be scary for anyone, especially during an upheaval of an entire 400-person IS department. Cooper changed the jobs of 50 percent of her staffers within six months, yet no one left or was let go. Some took on new responsibilities; others took on expanded or completely new roles. Cooper says some mid- and upper-level staffers were initially uncomfortable with their new roles, but she says she spent a lot of time fostering a new attitude about the change.

"I dragged them into the conversations kicking and screaming," Cooper says. "But I said to them, 'Unless you think of what it means to change on this level, you will never make it happen.'"

Similarly, IS senior management held a town-hall meeting to announce the changes and deal with questions. Staff members did express some concerns at that meeting and subsequent monthly staff meetings.

"With any big change, the unknown is always a concern. And it was harder around the areas [of IS] where people had worked for a long time," says Zack Hicks, national business administration manager in IS.

"People wanted to know more information about what was going to happen to them. They wanted to know the specifics of their new positions or the changes to their current positions."

The key, Cooper and Hicks say, is that all IS staffers were brought into the development of the new organization early on. Indeed, most IS staffers had played some part in the Total Value Action Program. "We didn't go off into a corner and pop out with a new org chart," Hicks says.

The most significant initiative called for improved alignment with the business side. At the heart of this new effort would be a revamped Office of the CIO structure—with new roles, reporting lines and responsibilities.

As part of the rehaul, Cooper took top-flight personnel out of the Data building and embedded them as divisional information officers, or DIOs, in all of the business units. These DIOs are accountable for IT strategy, development and services, and



Toyota CFO **Tracey Doi** and **Doug Beebe**, the division information officer for finance, enjoy a particularly fruitful collaboration. They sometimes finish each other's sentences, and there seems to be a layer of trust between them.

at Toyota Motor Sales, Cooper hoped that this new transparency would lessen IS's role on IT project vetting and monitoring, and increase business's responsibility.

"Barbra shouldn't be asked to make value judgments about whether or not a project is worth it to the company," Daly says. Project sponsors (with their DIO at their side) have to come back at set intervals, and provide status updates on how each project is doing.

The executive steering committee now controls all of the project funds in one pool of cash, and it releases funds for each project as each phase of the project's goals are achieved. Everyone in the company can look at which dollars were (and were not) going to be spent, the pool's administrators can sweep unused funds out, and other

Cooper says the organizational structure today is "almost unrecognizable" to the IS employees she inherited when she first arrived in 1996. Yet there has been very little turnover (Hicks says less than 3 percent a year). One key element was rotating IS people into other parts of the company and bringing business-people into IS. Hicks, for one, came to IS from the business side.

For the first time, Cooper also tied part of the senior IS managers' bonuses to their success in meeting the goals of each of their annual plans. These managers are judged on IO areas and on how well they meet the objectives in those areas—for example, meeting project-based goals (whether the project was done on time, on budget) and operational goals (implementing new governance and portfolio management processes).

To further strengthen the IS-business bond, Cooper chartered the executive steering committee, or ESC, to approve all major IT projects. The committee consists of Cooper; Cooper's boss, Senior Vice President and Planning and Administrative Officer Dave Illingworth; Senior Vice President and Treasurer Mikihiro Mori; and Senior Vice President and Coordinating Officer Masanao Tomozoe. By exposing IT's inner workings to the business side

projects can go after those funds. And there are no more spending swings; projects are regularly paced throughout the year.

Who Moved My Cheese?

Not everyone welcomed the revamped IS department with open arms.

To begin, many business executives didn't want to participate in the new approval process that required them to seek funding through the executive steering committee. Instead, those executives tapped lower-level business sponsors who worked with IS on business case development and implementation. But then, if a project ran into trouble, those high-level "executives would scatter like cockroaches," says Goltara. No senior-level business execs were willing to take IS project responsibility. After about six months of this, Cooper demanded that a higher-level business executive—a corporate manager, VP-level or above—back each IS proposal. Now, the ESC won't approve a project unless that support is there. "There's equal skin in the game now," says Goltara.

Goltara says he no longer has to sell the ideas. "It's the VP of

distribution, or the VP of marketing," he says. "I'm sitting there, but [the ESC members] are not even looking at me. The committee members are grilling the business executive to see if he can support the business benefits."

But some business execs are still skeptical of the DIOs and business operations managers living in their offices. Doug Beebe, who took on the DIO role for the Business Support Systems (ERP, HR, finance, purchasing, legal, IS, corporate communications) and the Affiliates divisions (private distributors around North America), was greeted with skepticism by some business managers. Many of his customers felt ignored during the Big Six run-up, and Beebe says he is still working on mending those relationships.

Another challenge for Cooper was dealing with the uncertainty in her IS department after such a massive change. Employees' fears centered around changes in their responsibilities and reporting relationships. Before the overhaul, for instance, Bently Au had been responsible for privacy and security. After the reorganization, disaster recovery was added to his responsibilities. "I was a little bit overwhelmed," recalls Au. He says that middle managers were pretty stretched out during and after the restructuring, but follow-up training has helped him and other midlevel managers make the stretch.

A Gift to the Business

The three DIOs, meanwhile, have been learning on the job—essentially creating their roles as they nestle in with the business. So far so good, several business executives say. Daly says that having Karen Nocket, who took on the DIO role in Toyota Customer Services, in his management meetings has quelled any IS backlash before it can begin. In late 2004, a critical customer service function went down, but Nocket was there to brief the management committee on what happened and how it was getting fixed.

"Having Karen in the management meeting cut off all of the speculation and finger-pointing that sometimes emerges in that situation," Daly says.

Another executive who's a firm believer in IS's new operating model is CFO Doi. "Putting more senior people in as DIOs has been a huge benefit because there's a higher level of respect for individuals that are partnering with you," she says.

Doi's DIO is Beebe, and after spending five minutes with the pair, it's easy to see why theirs is a successful collaboration. They sometimes finish each other's sentences, and there seems to be a layer of trust between them. The duo recently collaborated on a

financial planning system that rolled out in early 2005. The existing system was outdated and could not handle the company's growth. Unlike previous years, Doi's finance group

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open arms. Many business executives still harbored resentments
from when they were
ignored
in the past.**

worked on the business requirements before selecting a system. "Before, we would have told IS six months into our planning process, 'Hey, you know what we're doing? We've got this great project. And we've already picked a vendor,'" says Doi.

This time, after Doi's group solidified the business requirements for the financial planning system, IS got involved. And all of this happened before any presentation to the executive steering committee. Even so, the project was bumpy, Doi says. Her finance staff had a difficult time getting used to the changes in the workflow necessitated by the new software system. And configuring the system so that it worked properly took a lot more time and effort than either IS or finance bargained for.

But because Beebe and his team worked with Doi's team the whole time, Doi says she is confident the bumps will be smoothed out. And she knows exactly whom to go to.

IS has also won more fans in corporate headquarters because of the new metrics. One industry metric all the business execs understand is how much each Toyota vehicle costs to manufacture. Now they know how much IS costs per vehicle, and each division head also knows how much all of his IT costs him. "I have a much better understanding now as these projects are moving through the approval process of how much it's going to cost in total," Daly says.

Toyota Motor Sales' board was particularly delighted with one number: In 2004, IS was able to give back to TMS 16 percent of the costs of running IT projects, a give-back that ran in the multimillions. And Cooper reports that the Japanese parent company is interested in her revamped IS model and wants to apply some of the techniques over there. "Barbra's stock is high," says Daly.

IS staffers now spend a lot more time traversing the courtyard between Toyota Motor Sales' business offices and the Data building. It's a change that the business side welcomes. "Projects are much more thought out now than they ever were before," Daly says. **CIO**

The Toyota Tapes

Hear MP3 interviews on the IS reorganization within Toyota, with insights from CIO Barbra Cooper about the new Office of the CIO. Download the files at www.cio.com/041505.

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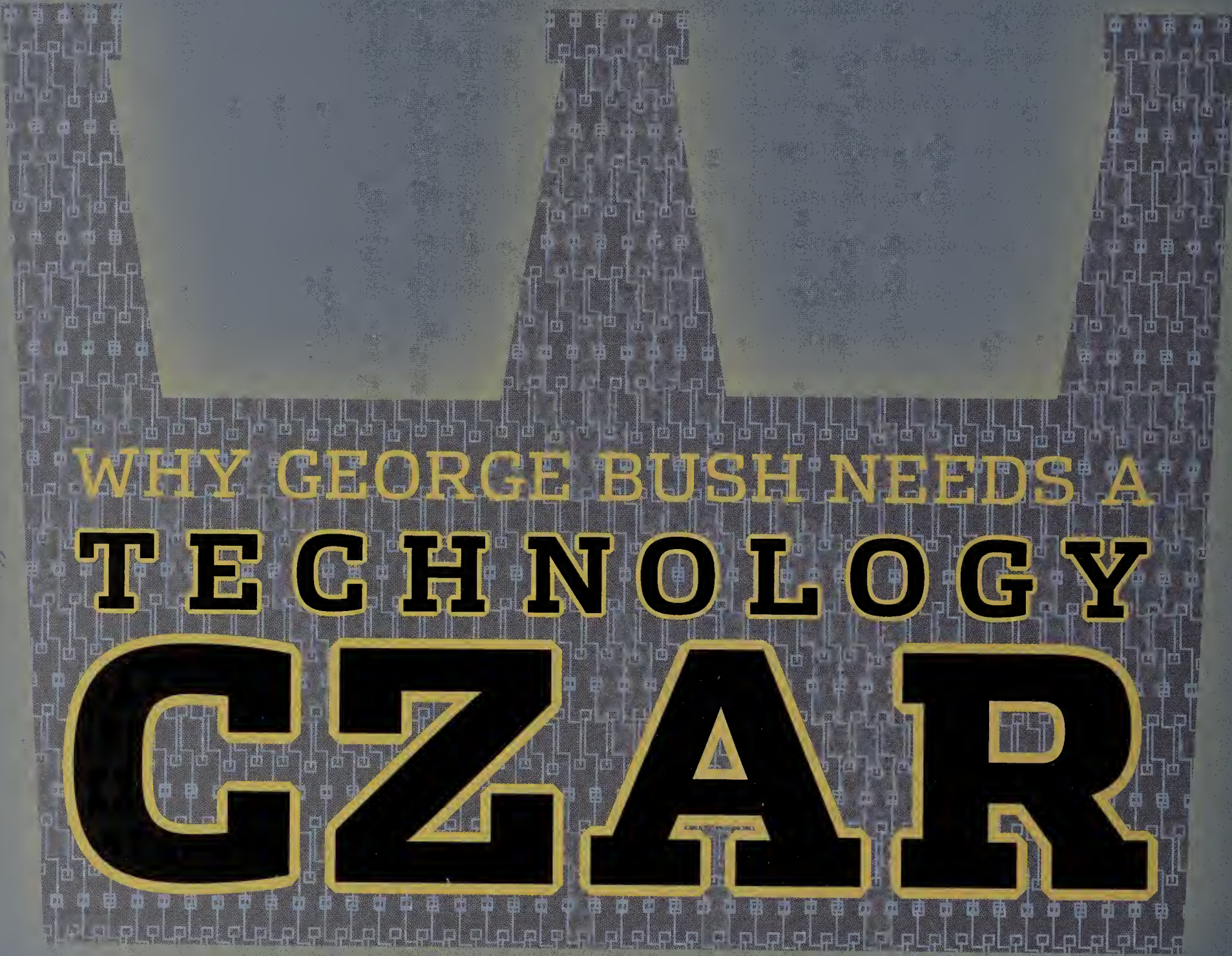
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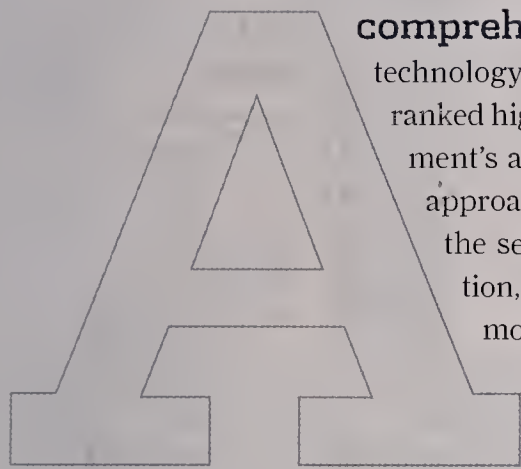
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WHY GEORGE BUSH NEEDS A TECHNOLOGY CZAR

If the United States wants to retain its current lead in technology innovation, the president should appoint a czar who can help formulate a coherent policy on issues ranging from cybersecurity to spam

BY BEN WORTHEN



comprehensive policy on technology innovation has never ranked high on the federal government's agenda. And now, as we approach the 100-day mark of the second Bush administration, it looks like we're in for more of the same.

It is an oversight that could have grave consequences for the country,

many technology policy experts and CIOs say.

In January, the National Intelligence Council, a high-level CIA think tank, released a report concluding that "signs are ominous" that the United States' position as the world's technology innovation leader may be severely weakened by China and India in the next 15 years.

According to the report, these two countries are in a unique position not just to respond to the next wave of technology innovation but to produce it—in large part because of coherent government technology policies and strong investments in science and engineering education, basic research, and other pieces of infrastructure. Hence, in 2020, it could be the Asian giants and not the United States that "set the rules for standards and implementation, and for molding privacy, information security and intellectual property rights," the report concludes.

"We should be scared witless," says Henry Kelly, president of the Federation of American Scientists and the assistant director for technology at the White House Office of Science and Technology Policy (OSTP) during the Clinton administration.

A recent poll by the CIO Executive Council (a professional organization for CIOs founded

by CIO) shows that IT leaders are starting to feel the same way. Forty-one percent of the 402 CIOs surveyed predicted that the United States would no longer be the world's technology innovation leader 15 years from now. And 60 percent of these respondents said they would like to see the federal government institute a coherent technology policy that sets specific goals for areas such as Internet access, cybersecurity, spam, and research and training. (For more on this survey, see "Wanted: Government Initiative" on Page 52.)

These CIOs and other technology and government experts conclude that in order for the United States to maintain its global leadership position in technology innovation, the nation needs a technology czar. This key official would buttress the nation's innovation process by doing three things: developing a strategic plan for technology in the United States, serving as a portfolio manager for government-sponsored R&D projects and coordinating technology policy across governmental agencies. The technology czar would fill a gap created by individual agencies that have their own agendas and R&D budgets. For instance, the technologies that make up the next generation of the Internet and the ensuing policy issues are all handled by different agencies. The Federal Communications Commission is responsible for the communications infrastructure; the Department of Homeland Security is responsible for cybersecurity; and the Federal Trade Commission is responsible for developing and enforcing privacy rules that will become only more important as connected appliances and devices start to emerge.

The dichotomy is even more blatant on the research side, where the agencies invest in projects tailored to their mission. At present, there is no one person thinking about how these issues relate to one another.

Reader ROI

- Why the United States' technology leadership is threatened by Asia
- How a powerful tech czar could help turn things around
- Why most CIOs are in favor of a central office for technology policy

"It is very important that these things be coordinated," says Bruce McConnell, a consultant who served as chief of information and technology policy for the Office of Management and Budget under Presidents Reagan, George H. W. Bush and Clinton. Paul Kurtz, who served in the White House as senior director for national security for the Office of Cyber-space Security during the first George W. Bush administration and is now head of the Cyber Security Industry Alliance, adds that, "having a more powerful individual to look at technology policy issues across agencies would be incredibly helpful."

While not everyone thinks that a technology czar is necessary, a majority of recently polled CIOs do. Sixty-three percent of the CIOs surveyed by the Council favored the creation of a central agency to coordinate technology issues across the government. These IT executives believe that a central agency would improve the U.S. government's ability to make smart decisions about information technology policy, and would be more responsive to the concerns of American businesses that have grown increasingly reliant on IT.

As more and more businesses go offshore, "we need to have policies that will support innovation here," says Anthony Hill, CTO of Golden Gate University and a member of the Council. "Someone who could coordinate R&D and who reports to the president would have immense value."

Piecemeal Policy

Innovation often seems like an American birthright. So why is it at risk now? Mainly because from the time it founded the Defense Advanced Research Projects Agency (DARPA) in 1958 (a year before the Russians launched Sputnik) to its recent creation of the Homeland Security Science and Technology Directorate, the United States made just a handful of changes to the way it conducts R&D. Federally sponsored research is funded by the individual government agencies—the Department of Defense, the FCC and the rest of the alphabet-soup organizations. Each has its own R&D budget and has to justify investments in terms of how much a project supports its particular mission. While there is some coordination between agencies, this usually takes place in ad hoc groups at low levels of the government, an official with the National Science Foundation (NSF) says. This ad hoc coordination is neither "comprehensive nor complete," says the NSF official who asked not to be identified. These meetings are usually just opportunities for agencies to recite a list of the projects they are working on, and the agencies involved never look past their own purview.

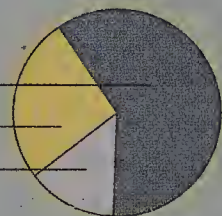
This structure does not do enough to support new innovations, particularly those that occur at the places where disciplines intersect, says William Bonvillian, legislative director and chief counsel to Sen. Joseph Lieberman (D-Conn.). For those multidisciplinary projects that don't have high-level gov-

WANTED: GOVERNMENT INITIATIVE

In a surprising change of heart, many CIOs now say they want more government leadership on key technology issues such as cybersecurity, online identity theft, spam and spyware. Furthermore, a clear majority want a central technology agency. While previous polls by CIO indicated that many CIOs preferred a hands-off approach by the federal government, a new survey of 402 CIOs shows that many now advocate a more proactive stance.

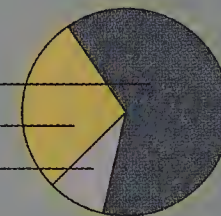
Should the U.S. government create a federal technology policy similar to the way the U.S. has an energy policy and a national education policy?

Yes	60%
No	26%
Don't know	14%



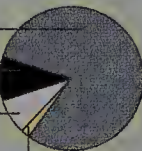
Should the U.S. government create a single federal technology agency that oversees all technology policy?

Yes	63%
No	28%
Don't know	9%



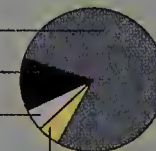
Has the U.S. government done too much or too little to regulate...
...spam and spyware?

Too little	80%
Just right	10%
Don't know	8%
Too much	2%



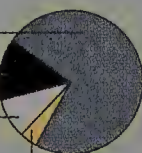
...online privacy protection/identity theft?

Too little	78%
Just right	12%
Don't know	5%
Too much	5%



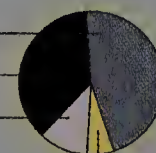
...cybersecurity/critical infrastructure?

Too little	73%
Just right	14%
Don't know	9%
Too much	4%



...development of technology standards?

Too little	46%
Just right	37%
Don't know	11%
Too much	6%



ernment support, there is a greater likelihood they will be neglected. Cybersecurity, an area that 73 percent of the CIOs surveyed by the Council said the government has underfunded, is one such potential victim. The Homeland Security Science and Technology Directorate, which had a \$918.2 million R&D budget in 2004, has dedicated only \$1.5 million for long-term cybersecurity research on the premise that DARPA and the NSF should fund basic research. DARPA, however, has moved away from basic research over the past 20 years (the DoD's development budget has doubled while DARPA's basic research budget has declined in real dollars), leaving the NSF to fund the bulk of long-term cybersecurity research. Yet last year, the NSF could afford to fund only 8 percent of the cyber-

plan will cut the R&D budgets of other agencies over the next several years.

- Private-sector R&D investment dropped by \$8 billion in 2002, the largest one-year decline in nearly 50 years.

- The number of students pursuing science and engineering PhDs has been in decline since 1998, and only 5 percent of U.S. college students graduate with engineering degrees.

These trends could be fatal to U.S. innovation supremacy and future economic prosperity, says Gregory Tasse, the senior economist for the National Institute of Standards and Technology, which is part of the Commerce Department. Research shows that technology innovation accounts for half of the GDP growth for almost all of the industrialized nations except Canada,



As more and more businesses go offshore, "we need to have policies that will support innovation here."

—ANTHONY HILL, CTO OF GOLDEN GATE UNIVERSITY

security proposals it received—even though it estimated that more than 25 percent deserved funding.

The pattern repeats itself when a new technology enters the mainstream. When a technology matures to the point that it requires policy setting, it is squeezed into the agency that seems like the best fit. Thus, seemingly related issues are treated piecemeal. For example, DHS protects against viruses and hacks, the FTC regulates spam and the Justice Department sets policy for online identity theft. "Individual agencies' jurisdiction does not give them the ability to effectively manage a cross-cutting issue like technology," says Kurtz.

Innovation at Risk

While recent presidents have demonstrated varying levels of commitment to science and technology, none has pursued policies that would weave these pieces together into a single innovation ecosystem. The result, says Kelly, is that "we are coasting on a previous generation of solid investment." And the wear is beginning to show. Consider the following:

- Government R&D funding as a percentage of GDP is at an all-time low. Not only did the National Science Foundation suffer a budget cut in 2005, but President Bush's deficit reduction

and three-quarters of their productivity growth. And one of the most critical factors for achieving that growth is where a particular innovation occurs. If the innovation occurs in the United States, we are the most immediate beneficiaries. The principle holds for historical innovations such as railroads and the telephone, and for more recent ones such as the semiconductor. If it happens somewhere else, well, to the victors go the spoils.

On a more granular level, Fran Dramis, CIO of BellSouth, says that innovations that take place far away are harder for a CIO to incorporate. "If I have to go to China to learn about a new type of innovation, that will delay my adoption of it," he says.

Last June, the President's Council of Advisors on Science and Technology completed an assessment of the United States' ability to recruit and train technologists and its R&D infrastructure: It concluded that "our entire national innovation ecosystem [is] at risk."

The Asian Threat

In contrast, other countries, particularly developing countries in Asia, have aggressively pursued national technology policies that receive support at the highest levels of government. Over the past several decades, these countries have established Cabinet-level

ministries of science and technology and have developed detailed strategies for building a system of innovation designed to elevate these countries into the world's top-tier economies. The National Intelligence Council report noted that these policies have enabled underdeveloped countries to make enormous strides in a short time. South Korea and Singapore, for example, have focused explicitly on the semiconductor and high-end electronics industries to great effect. Twenty years ago, Samsung, a Korean company, was considered a cheap, second-tier electronics manufacturer. Today, it is one of the world's most advanced plasma TV makers and a top producer of cell phones, computer chips and monitors.

China and India pose the greatest threat to America's hege-

many Asian countries are approaching the amount that the United States spends as a percentage of its GDP. One way that China and India have begun to close the gap is by attracting private foreign investment in their technology sectors. India has established government-sponsored technology hot spots in places like Bangalore. China gives tax breaks to companies that invest in its research labs and provides incubator services such as free office space and financial incentives for startups. One Chinese company that had its start in China's incubator system is Lenovo, the computer maker that recently bought IBM's PC division. "China has built a small business technology infrastructure comparable to the one that you find near Route 128," says Ratchford, referring to the high-tech corridor west of Boston.



"If I have to go to China to learn about a new type of innovation, that will delay my adoption of it."

—FRAN DRAMIS, CIO OF BELL SOUTH

mony in technology innovation, says J. Thomas Ratchford, the former associate director for policy and international affairs at OSTP under George H. W. Bush; Ratchford now chairs the U.S. side of the U.S.-China Science Policy Initiative for the NSF and the National Natural Science Foundation of China (NSFC). While India and China have different policies, they have common goals and points of emphasis. First and foremost, they are concerned with producing a technology talent pool and have implemented programs that encourage students to pursue the sciences. India actively recruits top science teachers and has encouraged its science institutes to adopt local high-schools and universities. China has made an effort to apply IT throughout its education system. Both countries have elevated the importance of science and technology in their societies. And it shows. In China, 39 percent of all college students graduate with engineering degrees. (For more on China's technology policy, see "The Great Leap Forward" in the online version of this story.) This year Chinese and Indian universities will produce about 320,000 engineers, more than five times the number in the United States. These are the workers to whom American companies are currently outsourcing their IT work.

The United States has the world's largest GDP, and few countries can spend as much as it can on basic research—although

The Tech Czar

China's communist government, of course, allows it to steer its centrally planned economy with a heavy hand. And India's technology success has come at the expense of other sectors of its economy. It's hard to imagine the same extent of government intervention on technology matters in the United States. For starters, that isn't consistent with the principles of a market-based economy. Wayne Crews, vice president for regulatory policy and director of technology studies at the conservative Competitive Enterprise Institute, says that any time a government gets too involved in setting policy, it risks undermining the marketplace. Crews and others believe that centralizing all technology issues within one agency would create too much bureaucracy.

"Fragmentation and decentralization is one of the great strengths of the U.S. system," says Philip Shapira, a professor of public policy at the Georgia Institute of Technology. "However, there are probably opportunities for improved leadership."

Appointing a technology czar would address weaknesses in the current system while preserving its strengths, says McConnell. At its essence, the position is a leadership one. R&D projects are still selected, funded and managed by the existing government agencies—as is policy setting. This main-

tains the decentralized nature of the current system, allowing the experts already in place to concentrate on what they do best. The technology czar's primary function is to serve as a portfolio manager for these projects, to make sure that a particular field is not neglected.

Furthermore, the tech czar position can be created without adding another layer of government bureaucracy. The authorization has been in place since 1976, when Congress established the OSTP. Its charter is to track trends, conduct studies and prepare an annual report on the government's science and technology accomplishments. OSTP already has an office and a staff. Turning it into the technology czar's administrative home wouldn't be hard. The structure also exists to give the technology czar the ability to coordinate technology issues across agencies. A 1993 executive order allows the president to appoint a Cabinet-level assistant to the president for science and technology to head the National Science and Technology Council (NSTC). NSTC is an advisory group made up of the science adviser and representatives from the government agencies. It describes itself as a "virtual" agency for science and technology that coordinates issues across the government. In addition to heading OSTP, the technology czar could head NSTC, giving him an administrative backbone, advisory power and a direct oversight of the agencies.

Currently, however, individual government agencies have little incentive to work with any head of NSTC or OSTP, since as Cabinet members, they have more access to the president, his top staff and powerful members of Congress than the science adviser does. In order to reverse this dynamic, the technology czar must have the ability to influence agency R&D budgets. The ideal way to achieve this would be to give the tech czar a sufficient budget to spur the appropriate agency to invest in underfunded areas.

The tech czar also needs to have a strong relationship with the president. McConnell says that the position will have the power it needs only "if you have to answer this guy's phone calls, or else you hear it from the president." The decision to give this authority to the technology czar rests solely with President Bush. And while many experts and CIOs feel that it is an important step whose time has come, their arguments may be falling on deaf ears. In fact, as Kelly points out, Bush has taken steps in the opposite direction. He eliminated the assistant to the president for science and technology position, and filled only two of OSTP's four designated associate director positions. OSTP was moved from the Old Executive Office Building, where most senior White House offices are, to rented space

several blocks away, and then finally to the New Executive Office building, which houses less senior staff. And Bush's decision to send astronauts to Mars was led by the National Security Council, not OSTP or NSTC.

Appointing a technology czar who has a permanent home in the government would give CIOs a single place to turn with their concerns. A majority of CIOs in the Executive Council survey believe this would increase their organizations' ability to respond to the government about pressing technology policy issues. And this kind of public-private collaboration is necessary for good policy-making, CIOs say.

This is exactly the approach the United States took in the 1980s when its technology innovation leadership was threat-

ened by Japan's mastery of new manufacturing techniques. Based on recommendations made by a commission of industry leaders and academics (led by then-president of Hewlett-Packard, John Young), Congress passed and President Reagan signed into law a series of bills that eased restrictions on technology transfer between the government and industry, and allowed for government and multicompany collaboration on R&D. One program that emerged from this environment was Sematech, a joint venture of 14 U.S. semiconductor manufacturers that received federal matching grants for investments in improved manufacturing techniques. By the early 1990s, the U.S. semiconductor industry, which had lost its lead to Japan, was making the world's

fastest and best products, paving the way for massive productivity growth and the tech boom of the late 1990s.

The Young commission ultimately became the Council on Competitiveness, which last December warned that while the United States had overcome the threat it faced two decades ago, new challenges jeopardized its lead. The Council said that the United States needed to move beyond efficiency and quality (concerns in the '80s) and toward innovation. And if American companies can do that, says BellSouth's Dramis, "the path from innovation to global competitiveness is short." 

Senior Writer Ben Worthen can be reached at bworthen@cio.com.

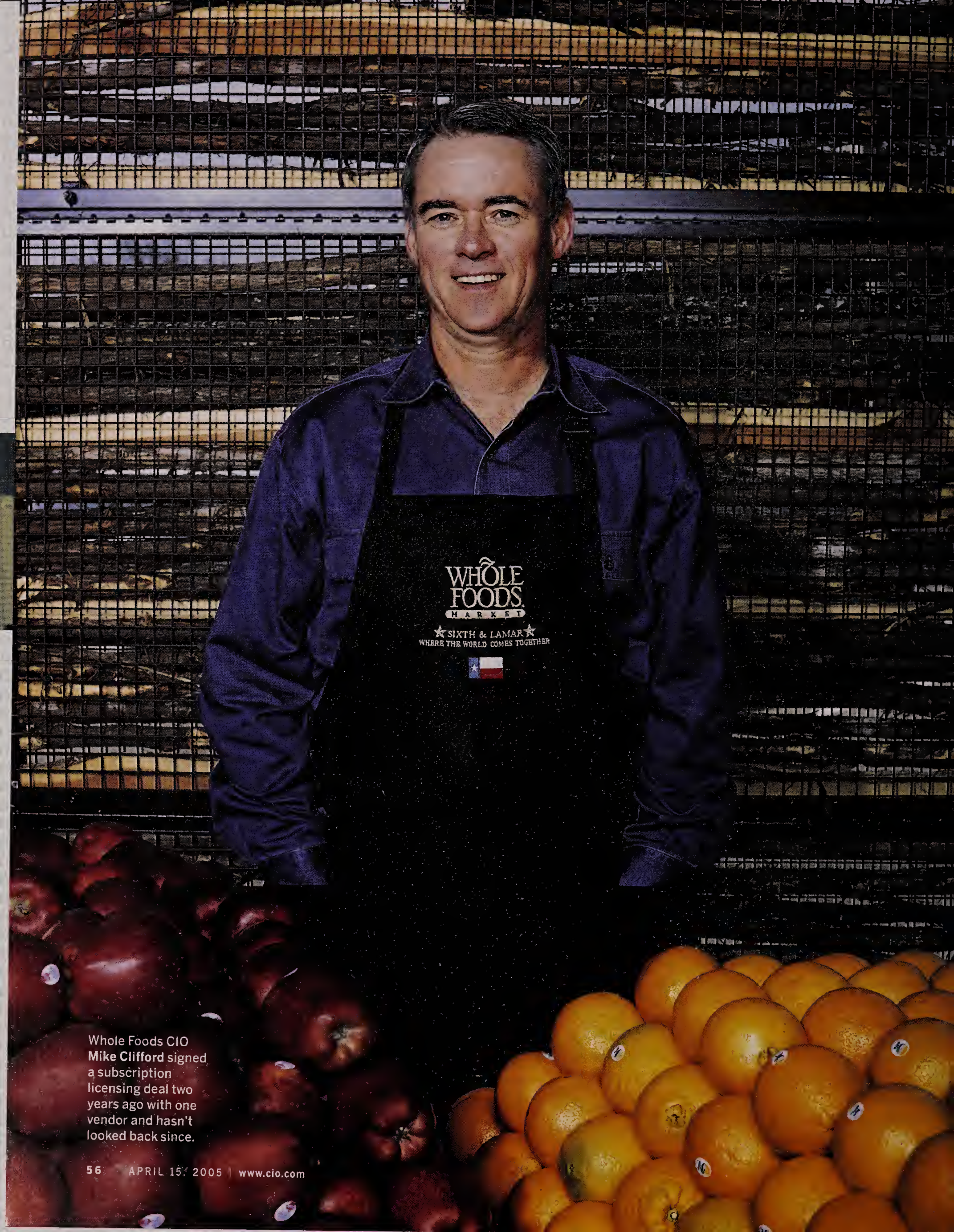
More on Technology Policies

For a closer look at one country that does have a technology policy it adheres to, read **The Great Leap Forward** about China's great emergence. And for more on our own need for a workable technology policy, read our new **Special Report: Tech Policy**. Find the links to both at the online version of this article or at www.cio.com/041505.

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WHAT THE CZAR WOULD DO:

- 1 Develop a strategic plan for technology in the United States.
- 2 Serve as a portfolio manager for government sponsored R&D projects.
- 3 Coordinate technology policy across governmental agencies.



Whole Foods CIO
Mike Clifford signed
a subscription
licensing deal two
years ago with one
vendor and hasn't
looked back since.

Subscribe

While subscription licensing offers certain advantages, beware unforeseen price increases down the road

Now,

Pay Later

Two years ago, Whole Foods Market CIO Mike Clifford surveyed the software landscape with a sense of dread. He knew he had to replace his aging homegrown data warehousing systems and do a better job of connecting inventory information from Whole Foods stores across the country. Like most CIOs in his position, he was on the lookout for the best deal and fit for his company. But he didn't want to go the usual route: tough negotiations leading to a million-dollar deal to buy the software code outright. He was tired of the typical software pricing and licensing agreements that can trap customers into lengthy deployments and saddle them with hefty maintenance and consulting fees. "I find

the pay-in-advance software licensing approach appalling," says Clifford.

Instead, Clifford negotiated a subscription deal with retail software vendor Retek last year, for which he pays a yearly fee and is expected to renew only if he is satisfied. Clifford admits that, in the long run, he may not save money with his subscription license. But if he isn't happy with the software, he is free to walk away. "The savings are

Reader ROI

- How subscription licensing can save money in the short term
- Ways to protect yourself from price increases
- When subscriptions don't make sense

BY
SUSANNAH
PATTON



“Subscription licensing does take a lot more work, attention, financial acumen and modeling.”

—MIKE CLIFFORD

huge on the risk side,” he says. And he adds that the vendor is more responsive and eager to get a new system up and running quickly, knowing that the renewal is dependent on the initial performance. (Retek has since agreed to be bought by Oracle.)

Clifford is capitalizing on a gradual shift in the way that enterprise software is being sold. Enterprise software vendors that have long sold their wares via the perpetual license (in which the customer buys and forever owns the software code and signs up for yearly maintenance and support for an added 15 percent to 20 percent of the license fee) are increasingly experimenting with pricing and licensing schemes that allow customers to subscribe for a limited period of time. The subscription model, which includes “utility” (or “pay-per-use”) agreements and hosted service deals, allows customers to rent software with a low up-front cost and then pay on an ongoing basis. If the fee is not paid, the software will be unplugged. The “on-demand” approach emerged to prevent some of the software blunders of recent years, in which corporations made large bets on ERP and CRM systems that ultimately failed. It can also provide a welcome choice for CIOs who want to try software for a short period of time.

But the new opportunities also bring added challenges. CIOs need to protect themselves against the unforeseen price increases that often accompany subscription license deals. If customers aren’t careful to negotiate protection against steep price jumps, they could end

up with ballooning software costs. CIOs also need to predict usage patterns carefully, since the price tag on some subscription deals can suddenly rise if usage unexpectedly increases. And while subscription licensing is saving money and aggravation for some CIOs, it isn’t for everyone. Subscription fees paid year after year may create a greater financial burden than a hefty up-front payment if a company ends up using the software for 10 years or more. In order to get the best deals as new licensing and pricing options proliferate, CIOs need to analyze the financial benefits, calculate the expected time frame for the IT investment and work with their CFOs to make sure they are choosing the right model.

“With no killer apps on the horizon, the percentage of software vendors offering this type of model is going to grow,” says Amy Konary, software pricing, licensing and delivery analyst at IDC (a sister company to *CIO*’s publisher). “CIOs need to be prepared.”

Software for Rent: The Appeal

Roughly 80 percent of software today is still sold as a perpetual license, according to IDC. By 2008, however, IDC predicts that 34 percent of worldwide software licenses will be sold as subscriptions. Anticipating this shift, Jason Maynard, a software analyst at Merrill Lynch, has come up with a new method for assessing

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and valuing software companies, taking into account the deferred revenue that comes with subscription sales. Maynard's Merrill Lynch On Demand Index shows a gradual shift toward on-demand or subscription licenses, he says, reflecting a "radical shift" in vendor strategies.

The trend toward subscription licenses, though moving at a slower pace than the hype originally suggested, is part of an overarching shift in the software industry. For years, CIOs complained about enterprise software's cost and complexity. For every dollar spent on a perpetual software license, they could expect to pay another six to eight times that amount on services, according to Merrill Lynch. "In what industry can you charge a customer, and then have your product fail half the time?" asks Maynard.

At the height of the dotcom boom, a raft of hosted service providers, known as ASPs, popped up and promised to deliver on software services via the Internet. Poorly thought-out business plans and technical glitches scuttled most of these ASPs, but a few, including Salesforce.com, persevered to challenge large enterprise software vendors such as Siebel Systems. Siebel now has its own hosted subscription offering, joining software giants Computer Associates, IBM, Microsoft, Oracle and SAS. And Oracle's planned acquisition of Retek will give the software giant a stronger presence in this market.

Since the tech market collapsed four years ago, buyers have been

gaining leverage in vendor negotiations. CIOs have limited budgets, and consequently, software sales have taken a nosedive. According to Meta Group, software pricing will continue to shrink over the next three to five years due to the advent of Web-based subscription services and low-cost offshore development.

As a result, CIOs are in a good position to negotiate lower costs and licensing deals that favor the customer. But don't expect software vendors to roll over. CIOs and others negotiating subscription licenses need to remain vigilant and push for the best deals. For example, Whole Foods' Clifford says he and Retek did some tough talking before they arrived at a consensus. They finally agreed to a fixed usage fee for each year Whole Foods uses the software, with maintenance bundled into the minimum usage fee. Clifford says he would have preferred no minimum usage fee at all and adds that the fee is "still too high." But he knows he can't single-handedly transform the way software vendors do business.

Indeed, the software-for-rent model will likely always coexist with the perpetual model. CIOs are sometimes reticent to try new licensing models because they are accustomed to the perpetual model and unsure about how to calculate benefits from subscription offerings. "In many ways, it's easier to stick with the traditional perpetual license," Clifford says. "Alternatives such as subscription licensing take a lot more work, attention, financial acumen and modeling."

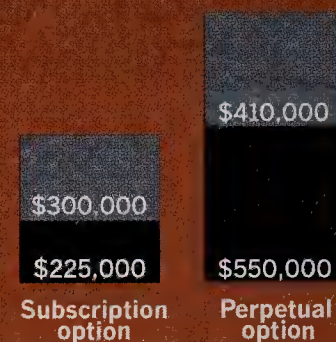
He Did the Math

JACOBS MANAGEMENT CFO Dave Mahler had his work cut out for him. Before deciding whether to go with a subscription license for a payroll system that would cover 5,000 employees at sister company Genmar Holdings, a boat manufacturer with nine locations across the country, he did the following basic calculations.

Licensing Cost Comparison

Mahler totted up the costs of a subscription license versus a perpetual license for the payroll software.

■ Ongoing annual costs
■ Up-front costs



	SUBSCRIPTION OPTION	PERPETUAL OPTION
UP-FRONT COSTS		
Onetime setup fee	\$125,000	\$450,000 (to buy license)
Consulting fees	100,000	100,000
	225,000 (TOTAL)	550,000 (TOTAL)
ONGOING ANNUAL COSTS		
Maintenance and support	\$0	\$100,000
Annual subscription fee	300,000	0
Extra services	0	60,000
Additional staff required	0	150,000 (For two in-house employees)
Hardware maintenance	0	100,000
	300,000 (TOTAL)	410,000 (TOTAL)
TOTAL COSTS	\$525,000	\$960,000

SOURCE: DAVE MAHLER

When Subscriptions Make Sense— and When They Don't

A year and a half ago, Mercury Interactive approached Mike Conlon, director of data infrastructure at the University of Florida, with a new kind of licensing offer. For a year, Conlon would rent Mercury's case tracking and load testing software, which monitors and improves performance of the university's enterprise applications, at a relatively low cost. Then, he would have the option to renew at the same price for three years. Conlon decided to take the leap because he saw little risk in renting this type of software. "We didn't have a big outlay up front, and we didn't have the burden of thinking we would have to stick with it," he says.

Since then, Conlon has renewed his deal with Mercury and says he is open to subscription deals for other software licenses. The biggest advantage, he says, is the freedom to change his mind. In the '90s, he recalls that the university had a terrible experience with several perpetual licenses it bought for e-mail software from various vendors. In one case, university officials had to abandon the license; another time, they spent lots of money on fixes because of user complaints. "If we had a subscription license for those e-mail packages, we would have saved a lot of time and money," he says.

Conlon admits that the subscription model isn't for everyone, especially those who believe they will be using the software for a long time. "There are a lot of people who believe (rightly or wrongly) that they will own the software for 10 or 20 years," he says. In that case, they should go with a perpetual license. He advises CIOs who are tempted to try subscription licenses to start with an application that they could imagine having for only two to three years. Michael Overly, a lawyer at the Los Angeles firm Foley & Lardner, also advises clients that subscription arrangements can be useful from a budgeting perspective because of low up-front investments. But if they believe they will be implementing the software for a long time

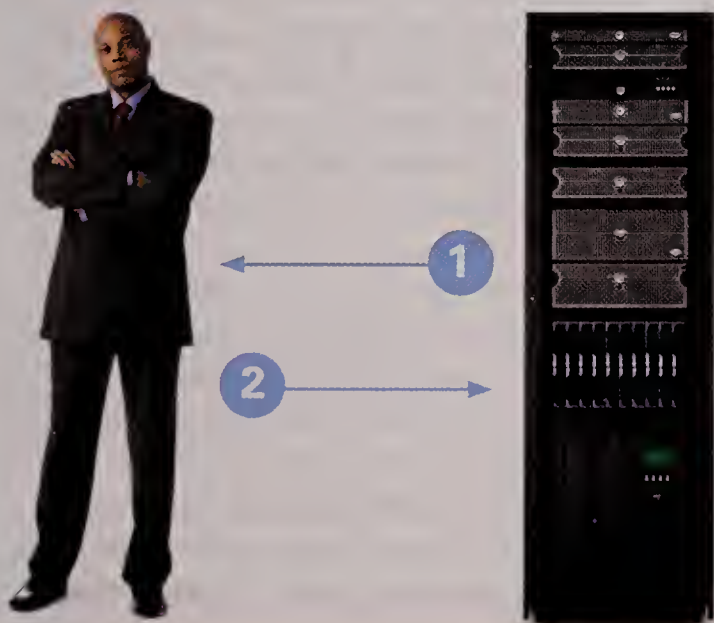
and will need extensive customization, it is less appealing because subscription costs can mount over time. In those cases, forking over the money for a perpetual license and paying up front for customization would be a better investment than paying a subscription fee year after year. CIOs also need to consider how strategic their systems will be. "When you're talking about sophisticated supply chain management that could give you a competitive advantage, then it wouldn't be the best candidate for a subscription," says IDC's Konary, adding that customers should be wary of signing up with a vendor that may not survive over the long term.

Wayne Bennett, a partner at the Boston law firm Bingham McCutchen, sees the debate over whether to go with a subscription license as a simple financing question. "It's really the same way you would buy a car," he says. "It's a financing determination driven by usage. I have an 11-year-old car, and it's no question that I got a better deal from buying than leasing." If you use your software for as long as you might drive a car, then perpetual licenses make more sense.

However, Bennett adds, "If you call your usage pattern wrong, you can get screwed." If you buy a subscription based on the number of people who will be using the software, the software vendor can increase its rates if the number of users goes up. With a perpetual license, the customer generally pays a hefty fee up front that often covers a large number of users, so there are fewer surprises down the road. In fact, it is common for companies to overbuy software and end up with more than they actually need.

How to Protect Against Price Shocks

Jim Trupiano, manager of IT contracts and vendor relations at Southern Co., a Georgia-based utility, has used SAS Institute's data analysis software under subscription license for more than four years. Each year, he carefully picks the number of employees who will be using the software in order to determine the price. "Your risk is in making sure you don't have more people



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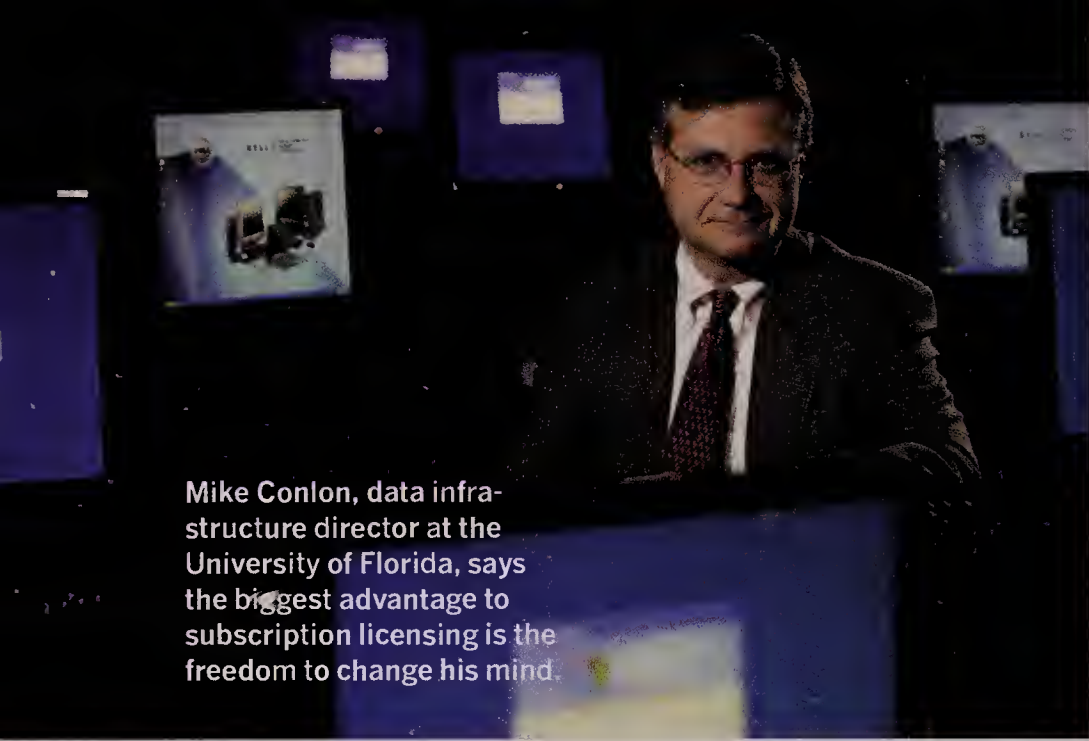
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Mike Conlon, data infrastructure director at the University of Florida, says the biggest advantage to subscription licensing is the freedom to change his mind.

using it than you've paid for," Trupiano says. "If you become dependent on the software and the cost begins to double, you will find yourself in trouble." Trupiano says it's of utmost importance in the subscription licensing arena to make sure you have a flexible contract that allows for growth at reasonable rates.

In addition to the usage question, CIOs must comb their contract to make sure they are getting some sort of price protection against outrageous yearly increases as well as warranty coverage. "It's essential to negotiate with the vendor to make sure there is price protection in there," says University of Florida's Conlon. "You can't have an escalator in there."

According to lawyers who work on subscription contracts, those just now signing up for subscription deals may have some nasty surprises down the road. It's still early to point to a lot of cases in which enterprise software customers have run into trouble with subscription licenses; the number of CIOs who have gone this route is still small. But the first major problems are emerging. One large national company, for example, signed a subscription deal for ERP software without nego-

tiating price caps. The vendor, which had agreed to keep prices stable for two years, came back with a 30 percent increase in the third year. With the new fees now kicking in, the company has no time to transition to a new system. The CIO at that company, who had not been involved in the original deal, is now scrambling to negotiate with the vendor to limit the price hike, but he has very little leverage.

Attorneys advising clients on subscription deals encourage them to seek as much price protection as possible; some say to ask for seven years of price caps in any subscription licensing deal.

Most vendors won't give price protection forever, however, so software buyers need to be sensitive to the approaching end of a protection period, says attorney Overly. A year ahead of such an expiration, he says, CIOs should start exploring options with the current vendor and others to minimize the risk of the subscription agreement. Instead of getting stuck with little time to change systems, CIOs should start renegotiating while they still have time to look for possible replacements.

It's a Numbers Game

Whole Foods' Clifford contends that with his new subscription license with Retek, he is able to better predict his software costs. To do so, he has analyzed his usage carefully and negotiated a system in which he pays a fixed fee for every user above the initial agreement. Clifford encourages CIOs, even those not interested in subscription licenses for software, to explore all options and talk to vendors about pricing and licensing before they select a product. "You won't get the best deals if you talk about functionality before pricing," he says.

To convince his CFO that a subscription license with Retek was the

A Bitter Aftertaste

How one CIO's experience with Microsoft soured him on subscription licensing

LARRY SHUTZBERG, CIO at packaging maker Rock-Tenn, has bitter memories of the day in May 2001 when Microsoft announced it was changing the way companies would pay for its software. The plan, known as Volume Licensing 6.0, replaced confusing upgrading rules and options with a maintenance plan called Software Assurance (SA). Under the new plan, customers would pay for the original license and a yearly fee and would be covered for all upgrades. Shutzberg balked at the new arrangement because, among other things, he calculated he would have to pay an additional 29 percent each year for the desktop software maintenance.

He was not alone. A significant number of CIOs said no to Microsoft that year. Since

then, Shutzberg says he has gone "cold turkey," by declining almost all upgrades to Microsoft Office desktop software over the past two years. "The goal is to only upgrade when we absolutely have compelling business drivers," he says.

Microsoft defends its licensing plan and says that it has added to its package, which now has 14 benefits, including training vouchers and home use support. And the company says that up to 35 percent of SA's customers are expected to renew their subscriptions. According to a Microsoft spokesperson, that number is "in line with company expectations." Microsoft also has a wide variety of subscription licensing plans for its software but says customers usually go with perpetual licenses.

Shutzberg says he won't be tempted by Licensing 6.0, although he has a good relationship with his Microsoft sales reps, because he dislikes any licensing agreement that charges maintenance fees for Office software. When the time comes to upgrade on Office software, he will negotiate the deal on its own merits. What's more: The experience with Microsoft has soured him on other forms of subscription-based software pricing, at least for the moment. He says he will continue to pay maintenance fees on his perpetual licenses for enterprise software "as long as we see value." When a vendor can show him the business case for a subscription license, he says, then he might be inclined to try it. **-S.P.**

way to go, Clifford walked him through some real-life examples that highlighted the problems with perpetual licenses. He explained how he could better manage risk by being able to walk away if the software wasn't producing value and how the arrangement would motivate the vendor to make it work. For the moment, Whole Foods' subscription license with Retek is the first one for the grocery chain, but Clifford is on the lookout for new opportunities. For example, he is currently struggling with a PeopleSoft system for financials that he inherited. He considers the PeopleSoft license "too expensive per user," especially since it includes "outrageous maintenance costs." If a good subscription offer comes along for financial software, he says, he is more than ready to jump ship and abandon PeopleSoft.

Jerry Dolinsky, senior vice president of worldwide sales at Retek, says he is in talks with several other customers who are considering moving to a subscription license.

But unlike his dealings with Whole Foods, much of the interest is coming from company CFOs, who are intrigued by the idea that they can move software expense from the capital to the operating expense side of the ledger and gain flexibility.

Dave Mahler is one of those CFOs. As head of finance for Jacobs Management, Mahler was looking for a replacement for payroll systems that served 5,000 employees at sister company Genmar Holdings, a large boat manufacturer. He had been unhappy with poor service and a lack of reporting from a hosted provider. Working with his CIO, Mahler looked at a couple of hosted payroll services and

Five Tips on Negotiating Subscription Licenses

1 If you're new to subscription licensing, start with an application that you plan to use for two to three years.

2 If you plan to use the software for a longer period, negotiate protection from sharp price increases for as long as possible. Try for seven years.

3 Make sure your contract allows for user growth at a reasonable rate.

4 Estimate how long you think you will be using the software, and do the math to compare costs over the long run with a perpetual license plus yearly maintenance fees.

5 Start negotiating with your vendor one year before your price protection ends to avoid getting stuck with little time to find a replacement if the subscription price goes way up.

—S.P.

also considered buying a perpetual license and doing payroll in-house. In the end, Mahler chose a subscription hosted payroll service from Ultimate Software. With a very small IT department and decentralized systems, Mahler found that the cost of paying a subscription would be similar to buying a perpetual license and paying maintenance costs. "But when I added up the headaches of doing it in-house, it became a no-brainer," he says, noting that a perpetual license would have meant adding to his IT staff. Mahler figures that the \$225,000 he paid to set up the system will be quickly covered by the \$100,000 a year he will save by avoiding maintenance fees plus the money he has saved by changing providers. And even though he will be paying Ultimate roughly \$300,000 a year for the hosted service, he won't be adding to his IT department. "From my perspective, there are fewer risks, internal costs and hassles," Mahler says.

Mahler believes that corporate executives have considerable leverage with software vendors right now, but they need to do the math for themselves to see what works best for them (see "He Did the Math," Page 60).

For his part, Clifford hopes more software vendors will offer subscription licenses. "Not many software vendors out there are enlightened," Clifford says. "I would say that those not open to the subscription option need to watch their backs because a lot of us CIOs want to do deals this way." **CIO**

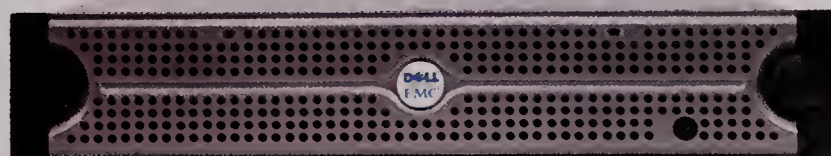
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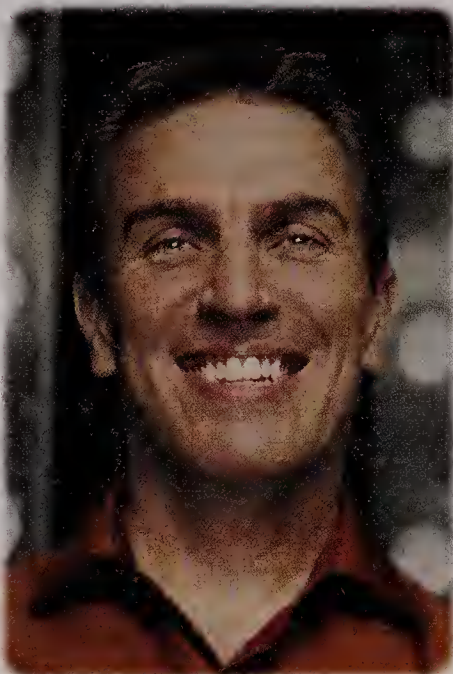
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In a League of Its Own

Major League Baseball used CRM to
succeed with a venture that
many thought would strike out

BY JON
SURMACZ

There were a lot of bloodshot eyes during breakfast at the Fourth Street Grill in St. Louis's Millennium Hotel on the morning of Oct. 28, 2004. The last 24 hours had exhausted Bob Bowman. He missed lunch and dinner the day before as he met with his bosses—owners of Major League Baseball franchises—who had gathered in the city for the World Series. A busy afternoon of business turned into a long night of celebration (for some) as the Boston Red Sox erased 86 years of misery by beating the St. Louis Cardinals to win the World Series for the

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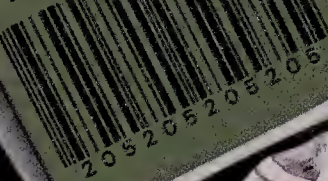
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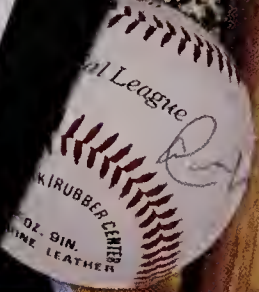
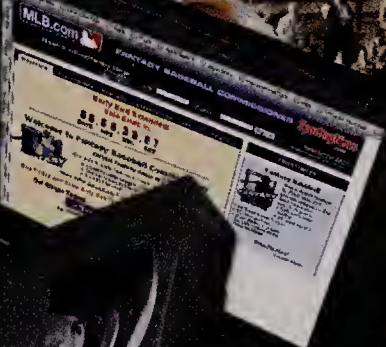
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RED SOX



SIEMENS

C 45

first time since 1918. If there ever had been a Curse of the Bambino, it was now extinguished.

Bowman, the president and CEO of Major League Baseball Advanced Media (MLBAM), isn't the kind of person who believes in curses, but he just might believe in blessings. While eating a slice of watermelon (his first meal in about 24 hours) at a morning meeting, Bowman peeked at his BlackBerry and saw some remarkable data: The Red Sox had been World Champs for fewer than 12 hours, yet the league's website, MLB.com, had already sold \$3 million worth of Sox gear.

The near insatiable and instant demand caught Bowman a bit off guard. He knew that Red Sox fans were passionate, but he had never seen numbers like these before.

It would turn out to be a record day for MLBAM, the privately held Internet spin-off of Major League Baseball. But in his four years at the helm, Bowman has presided over many record-breaking events. Just one week earlier, MLB.com set a site-record mark for single-day traffic when more than 8 million fans stopped by to peruse some 90 million pages of news and stats, listen to or watch a game, buy merchandise, play online games, or fiddle with other baseball-related odds and ends. For the 2004 season, more than 1 billion visits to MLB.com generated a reported \$120 million to \$140 million in revenue, far exceeding expectations of the site's critics, who doubted whether MLB.com would ever generate significant returns for Major League Baseball.

Before that October day was over, MLB.com would sell \$5 million worth of Red Sox merchandise (of which it keeps an undisclosed minority percentage). In fact, demand would remain strong right through the holidays. Red Sox gear made up 70 percent of merchandise sales at MLB.com as late as Dec. 31, 2004, helping MLBAM post its most profitable quarter ever. Bowman admits that the success of the Red Sox and their devout fans had a little something to do with it, but "you're allowed to have good luck," he says.

Over the long haul, however, success takes more than luck. MLBAM has been profitable since 2002 as revenue (which it derives from paid content, advertising, sponsorships and e-commerce) slowly ramped up to cover its startup costs, which were provided by the Major League Baseball franchises. (MLBAM used \$70 million of \$120 million total pledged by the teams before it became profitable.) Bowman wants revenue to grow between 30 percent and 40 percent every year for the next five years, but to do that, he must find more customers and make them as crazy about baseball as he is.

"A lot of people just go to one game per year, and we need to encourage that fan to be more active [to go to more games, to buy more merchandise and so on] with his or her favorite team," Bowman says. "We need more success at touching the fan every day."

Bowman's plan is to make MLB.com an all-you-can-eat baseball buffet for visitors. Whatever they want (scores, stats, auto-

graphed balls and bats, audio, video, fantasy games and so on), they'll be able to get. Bowman believes that in the digital world, customers increasingly dictate the business—a lesson any company can learn.

A Mix of Hits and Misses

CIO last spoke with Bowman in the summer of 2001, just a few months into his tenure (see "A Uniform Decision" Oct. 1, 2001), when privately held MLBAM still lived in its stuffy, first-floor offices in New York City's Chelsea Market building. Back then, MLB.com was a modest success in spite of some high-profile shortcomings. The glitches in its audio and video delivery were well publicized. Designers poked fun at its cluttered homepage. Fans complained about paying for content (such as audio broadcasts) that they used to get for free. Employees complained about the lack of air-conditioning.

In spite of all the negativity, MLBAM managed to sell more than 1 million tickets online and sign up more than 100,000 subscribers to its audio and video offerings during its rookie season. David Card, senior analyst with Jupiter Research, says that getting Web users to pay for content was a major coup for MLBAM during its launch. "It was very bold," Card says.

MLBAM had covered its other bases as well. It had signed a few multimillion-dollar sponsorship deals with RealNetworks, MasterCard and Marriott Vacation Club, and merchandise sales added a few million more to the ledger. And before the summer of 2001 ended, MLBAM moved up to its current home on the air-conditioned fifth floor that now houses some 175 employees (approximately 75 other employees work offsite).

The success has surprised more than a few skeptics, including Andrew Zimbalist, professor of economics at Smith College and author of several books on the business of professional sports. In his preliminary analysis, Zimbalist didn't think that the experience of watching baseball on a computer screen would capture much of a following—even with the group Bowman calls "displaced fans," who do not live near their favorite teams and therefore cannot watch them play unless they subscribe to satellite television or purchase special cable packages. However, advances in streaming technology and the adoption of broadband by the consumer market proved that Bowman's instincts were correct: Video would work on the Web, and consumers would pay for it (currently \$79.95 for a season pass). Zimbalist never envisioned that MLBAM would sign a multiyear, multimillion dollar distribution deal with Microsoft in 2004.

"I think they've pretty much conquered the basis for my initial skepticism and gone far beyond that," Zimbalist says, citing MLBAM's progress in Web video and its aggressive push toward wireless devices as major factors. "They're acting like a competitive business—not an old, hoary sports league. They are defining what's possible and what's available. Nobody at this point knows what the

**The
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had been World
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Bowman, who colleagues say is overflowing with ideas, now has more of the data he craves to guide his decision making and use as a check against his instincts. “Customers are going to tell you what’s important, and they’re going to migrate to what’s important online,” Bowman says. “And I think the most important thing is to listen to them.”

The Roar of the Crowd

During the first season, MLBAM CTO Joe Choti realized that the infrastructure (which was and still is built on a Sun platform) of the site could not accommodate Bowman’s on-demand vision for distributing content and conducting commerce. There was just too much content and too many users.

Choti has led MLBAM through two major re-architecture projects (following the 2001 and 2003 seasons) in his four years with the company. Choti says that the focus of each project has been to increase the site’s ability to handle traffic and add layers of fault tol-

ther improve its load balancing and fault tolerance capabilities.

Those projects help keep the site up and running. But Bowman wanted more. He wanted to know more about who was coming to MLB.com and why, and what else he could give them. At the end of 2003, MLBAM began an ongoing partnership with SAS and has spent more than a year customizing and integrating software that would give MLBAM’s customer-service, e-commerce, editorial and marketing groups a better idea of who their customers are and what they want from the company. Now, Choti says, MLBAM is able to better collect and manage its customer data to improve sales and marketing opportunities. MLBAM collects much of its data through its subscriptions and e-commerce transactions (information such as addresses, credit card information, phone numbers and so on). It is able to collect smaller bits—such as e-mail addresses—through sweepstakes, online newsletters and other offers. Web tracking tools also let MLBAM know which parts of the site visitors use most often; which ball games they watch, download or listen to; which online games they play; which team merchandise or game tickets they buy; and even who they voted for in last year’s All-Star game.

“The amount of information we get on a daily basis is staggering,” says Noah Garden, senior vice president, e-commerce. In four years, MLBAM has collected more than 10 million e-mail addresses. More important, better than half of those visitors have opted to receive communications from MLBAM—news, stats, or special offers for tickets or merchandise. MLBAM also partnered with AOL last season for an instant message service where it would feed content to anyone who signed up to add an “MLB Buddy” to his Buddy List. Partnerships with other messenger services, such as Yahoo and MSN, are forthcoming. It’s all part of improving and expanding MLBAM’s reach-out strategy.

“In 2001, we wanted fans to come to us,” Choti says. “In 2005, we’re still saying we want you to come, but we’re also going to come to you.”

Wait Till *This* Season

In July 2000, the Major League Baseball owners created MLBAM in order to take control of the league’s Internet presence. (It had previously been outsourced to online sports media company SportsLine.com.) Even though the owners unanimously approved the move, not everyone was happy. Bill Schlough, CIO of the San Francisco Giants, remembers the debates well. “At first there was some resistance and frustra-

tion, like we had stepped back to the pack,” Schlough says, whose pre-MLBAM website was regarded as one of the best in the league. “We [weren’t] as empowered to be innovative on our own anymore.”

However, Schlough says that working in partnership with MLBAM has been beneficial both for the Giants and Major League Baseball at large. “Over the long term,” he says, “MLBAM has turned out to be a real profit center for Major League Baseball.”

Some teams certainly hope that continues to be the case. The New York Mets, for instance, rank 17th in attendance among Major League Baseball’s 30 teams, narrowly ahead of the small-market Cincinnati Reds. The seats in Shea Stadium, the Mets home field,



erance so that the site is always available. During peak in-season periods, the website updates every six seconds and accommodates 750,000 to 1 million visitors to its free GameDay live, pitch-by-pitch scoring feature alone. All told, it consistently sees 50,000-plus requests for data and content per second.

To meet that demand, MLBAM has introduced content switching that lets specific server clusters respond to targeted portions of the site, allowing the website to respond to spikes in traffic on the fly. The computing power goes to where it’s needed the most, when it’s needed the most. Prior to this season, MLBAM migrated to a new, state-of-the-art data center located in New York City in order to fur-

were typically half empty last season. The off-season signings of superstars Carlos Beltran and Pedro Martinez may draw bigger crowds, but the Mets will also get a little help from MLBAM. "MLBAM has been a great source to help us get information out about our team," says Jay Horwitz, vice president for media relations with the Mets. "And they've been very helpful during the winter with season ticket sales, and we expect strong online sales throughout the season."

In 2004, MLBAM sold 11.2 million tickets online and projects a 30 percent to 40 percent increase for 2005. Bowman thinks MLBAM can help encourage ticket sales further by pushing offers to fans' cell phones and Web-enabled PDAs. This season, Mets fans who show an interest in ticket offers may get a text message along these lines: "Good afternoon, Mr. Smith. It's a sunny 71 degrees outside. There are still seats available for the Mets game at 1:10 p.m. today against the Reds at Shea Stadium. Press '1' if you'd like to purchase tickets." If the fan accepts the offer, MLBAM will send him a bar code to use as a ticket that will be accepted at the gate.

Other projects on tap for mobile distribution by MLBAM include this year's expansion of its fantasy (rotisserie) baseball offerings, a glaring weakness of the current website and missed business opportunity in Bowman's eyes. There are an estimated 5 million to 8 million people in the United States who play fantasy baseball, where fans compete with each other by managing "fantasy teams" based on real players' stats, according to the Fantasy Sports Trade Association. And companies such as SportsLine, the Sporting News, Yahoo and others have already carved out their territory in this burgeoning industry.

But this January, MLBAM signed a five-year, \$50 million-plus deal with the Major League Baseball Players Association for exclusive

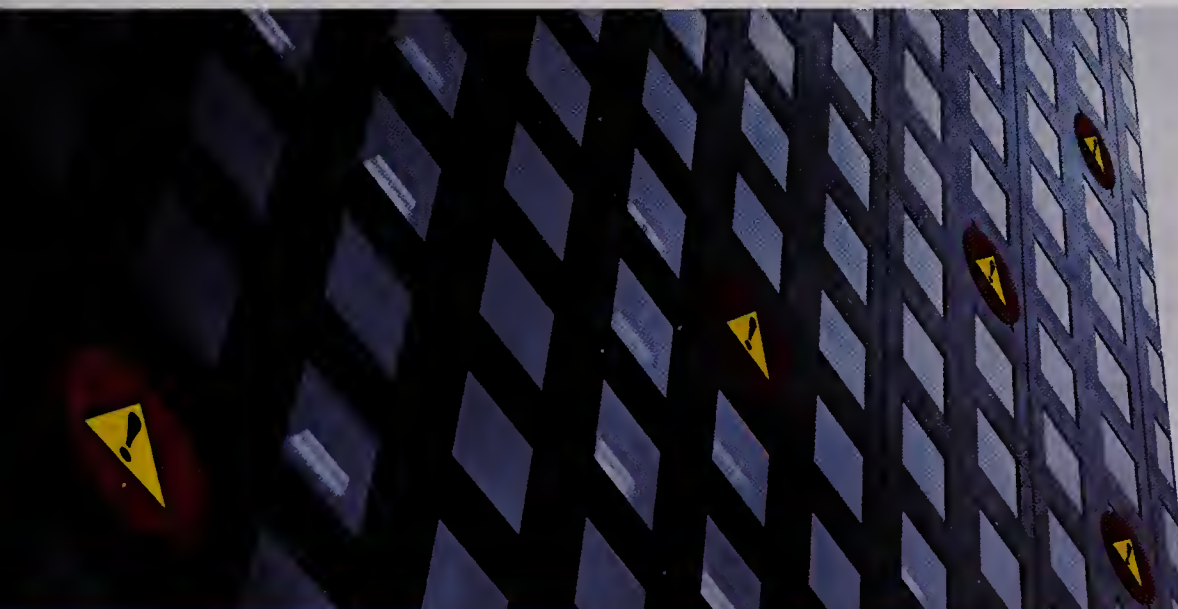
use and sublicense rights for the development of online content, fantasy games and wireless applications. This deal will create even more marketing opportunities for the site. In the blossoming wireless market, for instance, MLBAM sold more than 1 million cell phone wallpapers, ring tones and other downloadable content, ranging in price from 99 cents to \$2.99, last season.

The deal with the Players Association is one of a series of new partnerships, including a pact with the minor leagues to manage all of their league and team websites, that Bowman believes will help grow the game—a goal that serves as the primary mission of MLBAM (as long as it makes money doing it, of course). In four years, MLBAM has matured from a company that produced a website with lots of content and a few e-commerce offerings for computer users, to a full-fledged media company that produces its own live and recorded shows that can be viewed or heard in myriad ways. In spite of the growth of his company, Bowman doesn't view MLBAM and MLB.com as direct competitors to television, radio or live games. The customers, he says, will decide how they want to enjoy the game. MLBAM is just giving them several extra options.

"When someone is ready for baseball—at 1 a.m. or 2 p.m., in Beijing or Bangor, wherever, whenever—when they are ready for baseball, we want to get them something that's relevant to them," Bowman says. "That can mean the right team or the right player, the right multimedia, audio, video or maybe just text, and at the right time. If they come for 30 seconds, or 30 minutes, we knock their socks off." **CIO**

Web Writer (and shortstop) Jon Surmacz turns a phrase more easily than a double play. He can be reached at jsurmacz@cio.com.

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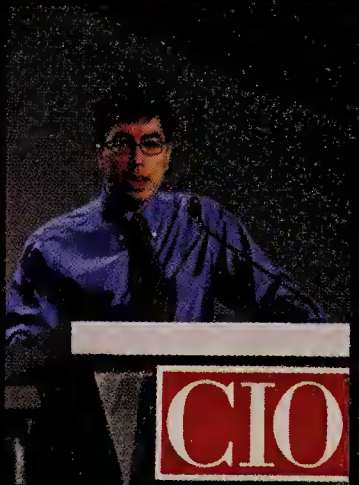
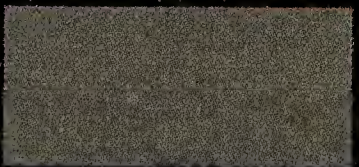


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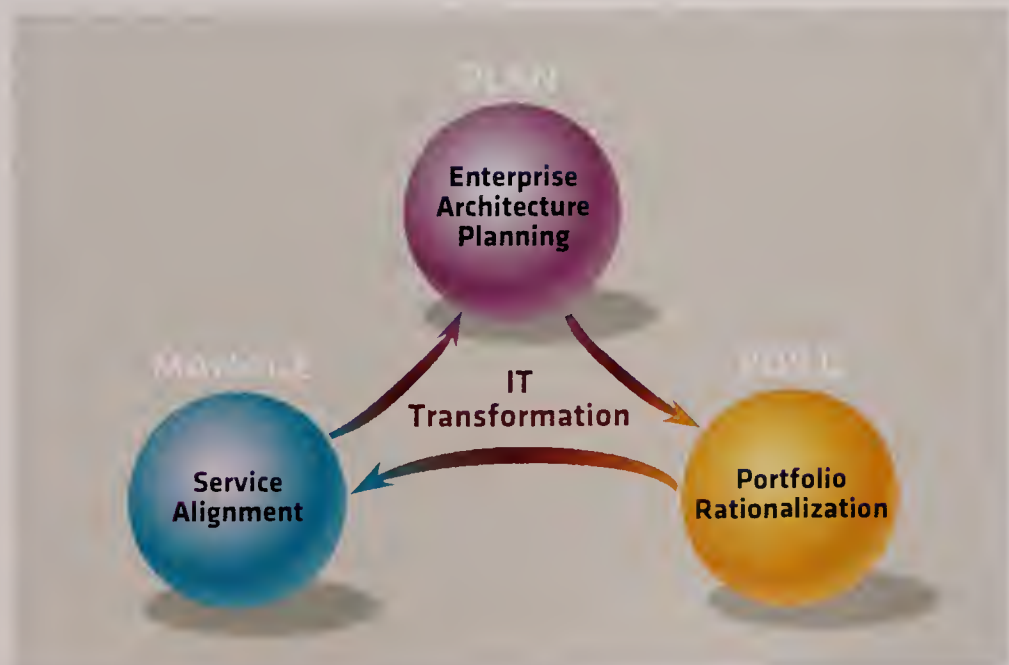
IT GOVERNANCE. It's one of those concepts that everyone is talking about. Indeed, many technology vendors and consultants have latched on to IT governance as the hot new sales category. Yet, based on the range of products and services being sold, a variety of IT Governance definitions have emerged, creating confusion in the market.

So, where can business and IT leaders turn for a single, comprehensive definition of one of today's key enterprise initiatives?

Leading analysts are stressing the use of a new three pillar IT governance framework, based on work by the IT Governance Institute (ITGI), emerging industry standards, customer best practices and thought leaders. This framework emphasizes the importance of ensuring that IT supports business goals, optimizes business investment in technology and appropriately manages IT-related risks and opportunities.

Among CIOs and IT leaders, the three pillar model and its corresponding IT governance maturity model is rapidly gaining momentum, as it finally offers a clear route out of the endless cycle of spending, stretching, patching and paying that their organizations have struggled with for far too long. With this definition of IT governance, IT executives can finally gain an understanding of the value their technology investments will provide, as well as a clear means to link their investments to business needs and goals. With increasing pressure from executive teams and boards of directors, IT organizations can't afford to rely on theories — they need governance that works.

Framework for IT Governance



The Three-Part Governance Framework

The emerging IT Governance framework is applicable for any organization seeking to seize the benefits offered by this comprehensive, forward-looking approach to IT. The framework consists of three major components, which incorporates the "plan/build/manage" lifecycle, and enables IT transformation through an ongoing feedback loop connecting the three elements. The Three Pillars are:

ENTERPRISE ARCHITECTURE PLANNING, WHICH FOCUSES ON:

- Enterprise architecture modeling and management
- Strategic IT planning and roadmapping
- Standards management

PORTFOLIO RATIONALIZATION, WHICH FOCUSES ON:

- Application and infrastructure rationalization
- Project-portfolio analysis
- Merger and acquisition/operational integration

SERVICE ALIGNMENT, WHICH FOCUSES ON:

- Service-delivery management
- Business-relationship management
- Vendor and outsourcer management
- IT financial management
- Sarbanes-Oxley and other regulatory compliance issues
- Business-continuity planning

Once IT leaders understand these three pillars, they typically gain a better understanding of why IT governance

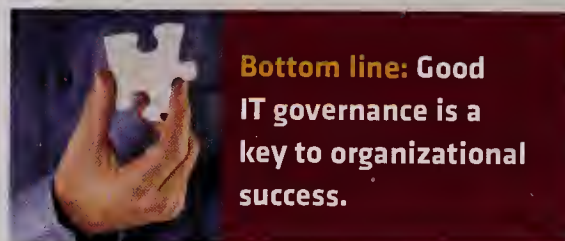
THE INFORMATION TECHNOLOGY GOVERNANCE INSTITUTE The ITGI was established in 1998 to advance international thinking and standards in directing and controlling enterprise information technology. Based in Rolling Meadows, Illinois, the Institute offers events, research and electronic resources designed to help enterprise leaders understand and have the tools to ensure effective IT governance. For more information, please visit www.itgi.org.

META Group Sees Critical Role for IT Governance

"To the CIO, IT governance means organizational structures, decision-making processes and an information foundation for driving controls across the enterprise," says Val Sribar, an analyst for Stamford, Conn.-based Meta Group.

A major step toward IT governance is "the development of an information foundation upon which critical asset, financial, and compliance decisions can be confidently made," Sribar adds. "Visibility into both the business and technology architectures is critical for growing and managing the enterprise."

Fortunately, there's help for IT executives with governance goals: "Vendors like Troux have emerged to fill the gap between governance processes and IT operations," Sribar says.



matters – and which solutions can best help them achieve their governance goals. Typical vendors, for example, in the area of project portfolio management (PPM) or systems management, only address a portion of the overall framework. There is an emerging need for a comprehensive solution to the overall IT governance problem.

Introducing Troux Technologies

Troux is the only company that provides a complete IT governance system that links process and workflow automation, automated policy management, and the robust information foundation required for effective IT governance across the lifecycle. To solve the most challenging IT governance issues CIOs face today, Troux's solutions leverage this foundation and across three domain areas:

ENTERPRISE ARCHITECTURE: Enables Enterprise Architects to fully model the desired future state architecture, and provides the capabilities to create and manage standards and roadmaps aligned with this architecture.

PORTFOLIO RATIONALIZATION: Provides IT executives the visibility and tools needed to ensure application, infrastructure, service and project portfolios are aligned with the business and optimized for cost.

SERVICE MANAGEMENT: Enables IT organizations to automate the definition and management of business services, and ensures that critical performance, compliance and business continuity

objectives are met.

With each of its solutions, Troux brings deep domain expertise, best practices and maturity models needed to help CIOs and IT executives make IT governance a reality

Conclusion

Just as IT governance has come to the forefront of the CIO agenda, executives have found that a standard set of best practices and approaches haven't been defined – until now. Troux Technologies provides the solutions and best practices required for CIOs and IT executives to effectively govern the planning, building and management of their IT operations. For more information on Troux's breakthrough products and solutions for IT governance, please go to www.troux.com.

An Invitation From Architecture & Governance

Recently, Troux launched *Architecture & Governance*, a new magazine dedicated to the smart, rational and cost-efficient use of IT resources to achieve corporate business objectives. If you are interested in learning more about IT governance, emerging best practices and tools and techniques that can truly change the way you do business, visit www.architectureandgovernance.com for details on our free subscription offer.

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FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

Edited by Christopher Lindquist
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Digital video
surveillance today
is more than
a security
technology;
it's a business
enabler

C-Eye-0

BY SCOTT BERINATO

SECURITY | When you signed on as a CIO, you probably planned on digging into some kind of ERP project. You knew you'd do the network architecture thing. Heck, you might even have anticipated that you'd build a presentation for the CEO on the merits of Linux. But, chances are, you never expected to be in charge of building a video surveillance infrastructure.

Well, now you are.

Or if you're not, you soon will be.

Look What Found You

Video surveillance is at the front end of an astonishing transformation. Once a world of clunky cameras and closed-circuit coaxial networks hardwired into a room full of cloudy gray 5-inch screens, surveillance is rapidly becoming a land of sleek, intelligent cameras linked to software applications running on the IP network. Some of these applications are basic, such as motion detection setting off alarms. Some are clever, such as a grocery store system where cameras at the checkout counter are linked to the receipt tape. (This way, loss prevention personnel can click on the record of any item purchased and be taken to that moment on the video.) More applications are coming, and they seem to be limited only by the imagination.

(Ethicists and privacy advocates are, understandably, on red alert.)

Bill Bowens recently managed a digital video surveillance project for Dallas-Fort Worth International Airport. The system allows for remote control of cameras and improved visual data, meaning he can see objects, faces, whatever more clearly due to better optics, zooming and other technology. The fact that data is stored digitally, not on tape, means it can be retrieved instantly. That brings the decision time on whether to evacuate a terminal down to mere seconds rather than several minutes or more. If Bowens manages to avoid evacuating a terminal unnecessarily just twice, the system will have paid for itself.

Surveillance is rapidly becoming a land of sleek, intelligent cameras linked to software applications running on the IP network.

Bowens, by the way, doesn't work in the security department. He's a project manager in the IT department.

"When I'm asked how I ended up in security," he says, "I say it invaded my world."

The Pan-Tilt Boom

The video surveillance market is already saturated. (Experts believe people have bought more cameras than they have places to put them.) And yet it will grow another 17 percent this year, according to fresh numbers from surveillance expert Joe Freeman, who runs J.P. Freeman Associates, a consultancy that tracks surveillance and other security issues.

IP-based digital video systems still make up a relatively small part of the overall market (less than a fifth), but Freeman says they will surge, growing by 70 percent to 90 percent this year, and will be the primary factor in the diminishing market for traditional closed-circuit TV. (CCTV still composes almost half the overall video surveillance market, but its share is rapidly dwindling.)

Proving ROI on digital surveillance may not be as hard as you think either. The post-9/11 obsession with security created this surge in surveillance investment, but what's sustaining it is that digital video surveillance appears to be living up to its hype. And, when done well, it provides real ROI for the business.

First off, it allows for consolidation of monitoring: You can watch many geographically disperse sites from one control room—something that was impossible with closed-circuit systems. An even bigger benefit of digital is that central control and monitoring allows you to put cameras at smaller sites and monitor them from the central operations center. With CCTV, you'd require a

closed system at that smaller site and onsite monitoring, which itself requires at least one employee. Digital video also beats tape in terms of storage and retrieval. Tape-based systems can require a full-time employee just for retrieval. (For even more benefits, see "The Little Things," this page.)

But the key to IP-based video surveillance's appeal is the ever-expanding roster of applications being attached to it. In other words, surveillance isn't just about security anymore. For example, British bed superstore Dreams recently deployed video surveillance for measuring foot traffic through a store to understand both peak traffic times and also shoppers' browsing habits, which in turn allows them to better configure merchandise around the store. Of course the surveillance is used for security as well, but it's also being utilized to train new employees.

Training, in fact, has become a possible killer applet for video surveillance, due in large part to the increased quality of the

The Little Things

New software applications are a primary reason digital video surveillance is growing rapidly. Here are some of the little things that have meant a lot to the growth of the technology.

- **New IP-based systems** use standard IT infrastructure. This limits buyer's remorse, as the technology evolves rapidly, and it allows CIOs to build systems to scale over time. They can even use in-house talent to develop applications instead of being forced into proprietary systems.

- **IP systems** can use power over Ethernet (PoE) to carry both data and power over one standard cable. Power costs on closed systems can be prohibitive, and building a new system that requires rewiring for power is unappealing. PoE can also keep cameras running on IT's uninterruptible power supplies during electrical outages.

- **New cameras** have advanced imaging capabilities. Sharper images and features such as digital zooming allow fewer cameras to cover a given space with greater detail.

- **Infrared and thermal imaging** can significantly reduce nighttime expenses. By spending a little more on cameras that function in the dark, you can eliminate the need to floodlight areas at night, saving on power costs.

—S.B.

images. Video of cashiers at a grocery store doing their jobs correctly (and incorrectly) is edited into video packages that train new hires. Sandy Jones, a surveillance consultant, says Dreams isn't alone in its use of cameras to assist retail; other companies are using surveillance for similar purposes. Still others are using cameras to improve logistics, assembling trains at hump yards (where the rail cars come off boats and trucks), for example, or monitoring assembly lines for quality control.

Suddenly, surveillance is a business enabler, not just barbed wire.



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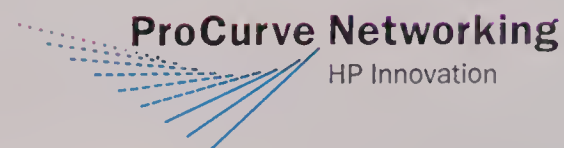
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The Catch

The newer technology, however, requires a significantly higher capital investment than did CCTV. The cameras have advanced optics that provide better pictures; longer lines of sight; automated panning, tilting and zooming; and in some cases, pictures from other spectra, such as infrared. Some digital cameras have their own IP addresses and become just another device on the network that can be controlled from the Web browser, like a printer or server. And, of course, all of them require networking infrastructure and bandwidth. Digital surveillance camera vendors claim, however, that while their products can be more expensive up front, reduced power requirements, increased flexibility and lower long-term maintenance costs ultimately make digital systems more affordable than CCTV.

Nevertheless, you can show your CEO all the five-year cost-benefit analyses and new applications you want. It's still a shockingly high amount of capital to request, and

flock to you like birds when you start flashing a stash of bread crumbs.

Aiming for Easy Marks

We started by saying that video surveillance is now the CIO's bailiwick because the technology essentially shifted to become part of the standard IT infrastructure, the IP-based networks, software applications and related technology that the CIO already controls. This is true. But also contributing is the fact that vendors want to move video surveillance into the IT realm because they can sell more to IT than to the security department.

The reasons for that are obvious. Primarily, the CIO's budget is usually bigger than the security team's, but there are other factors. The CSO often works under more strict risk analysis guidelines on projects. And with so many other things demanding his budget's attention besides just surveillance, if the CCTV ain't broke, he's not likely to fix it. The CSO's product cycles tend to be meas-

Many CIOs say they spend considerable time fending off aggressive surveillance vendors.

it's still video surveillance, in which he may be reluctant to invest, since the old CCTV ain't exactly broke.

So how do you get the infusion of capital you'll need? Pilot programs that demonstrate ROI will help, but they must be well planned. (Go see your CSO and find out, risk analysis-wise, where new cameras and applications will pay off fastest.) Also, try to apply as many applications to the video infrastructure as possible—training, marketing, logistics, quality control. Get these groups on board with using the new digital surveillance applications, and then share the burden with them. If the system will be used by them too, why not have them pitch in from their budgets?

You could also ask consultants or systems integrators to help. Be warned. They'll

ured in decades, not months, meaning he goes to market less often than does the CIO. The CIO is looked to for competitive advantage and for advanced applications that enable growth. Finally, CIOs are used to refreshing software and hardware frequently.

Many CIOs say they spend considerable time fending off aggressive surveillance vendors. "I almost canceled our contract twice over what I thought was really aggressive behavior," says Greg Meffert,

Keep Up Online

Technology Editor Christopher Lindquist scours the **best of what's on the Web** when it comes to emerging technology. Read his blog, **TECH LINKLETTER**, at www.cio.com.

cio.com

In January, simple Google searches found links to more than **1,500** unprotected surveillance cameras.

CTO of the City of New Orleans, who is in the middle of a citywide surveillance project that will eventually include 1,000 wireless, IP-based cameras. "All they wanted to do was tell me how great I was and then, 'Why aren't you rolling this out faster?'"

"The vendors are coming at us with the 'wow' factor," says Dallas-Fort Worth International Airport's Bowen. "If you don't pay significant attention to it, you'll buy lots of things that can do lots of stuff, but your [total cost of ownership] and integration will be no good."

The Two-Minute Case Study

Meffert provides a great example of a successful, IT-driven digital video surveillance deployment. When the current New Orleans city administration came into office, he says, the city had about two days worth of cash on hand and ranked at the bottom of a list of major cities when it came to technology infrastructure.

"Everything we could do had to either be budget-neutral or save us money," he says. New Orleans' paramount problem was its murder rate, the highest of any city in the



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country, and Meffert believed a high-end wireless surveillance system with motion detection could help. But that would require a huge investment in the neighborhood of \$300,000 just to start a pilot.

To jump-start the program, Meffert piloted the system in one of the highest-crime areas of the city. In six months, the murder rate in this area dropped 57 percent; auto theft, 25 percent; and burglary, 32 percent. He then started a website, Iseecrime.com, where neighborhood watch groups could sign up to become part of the city's surveillance network. For \$5,000, people could "adopt" a camera, and the city would integrate those views with its overall surveillance operations. In two days, Meffert says 220 groups and individuals registered. "That's a million bucks right there," he says.

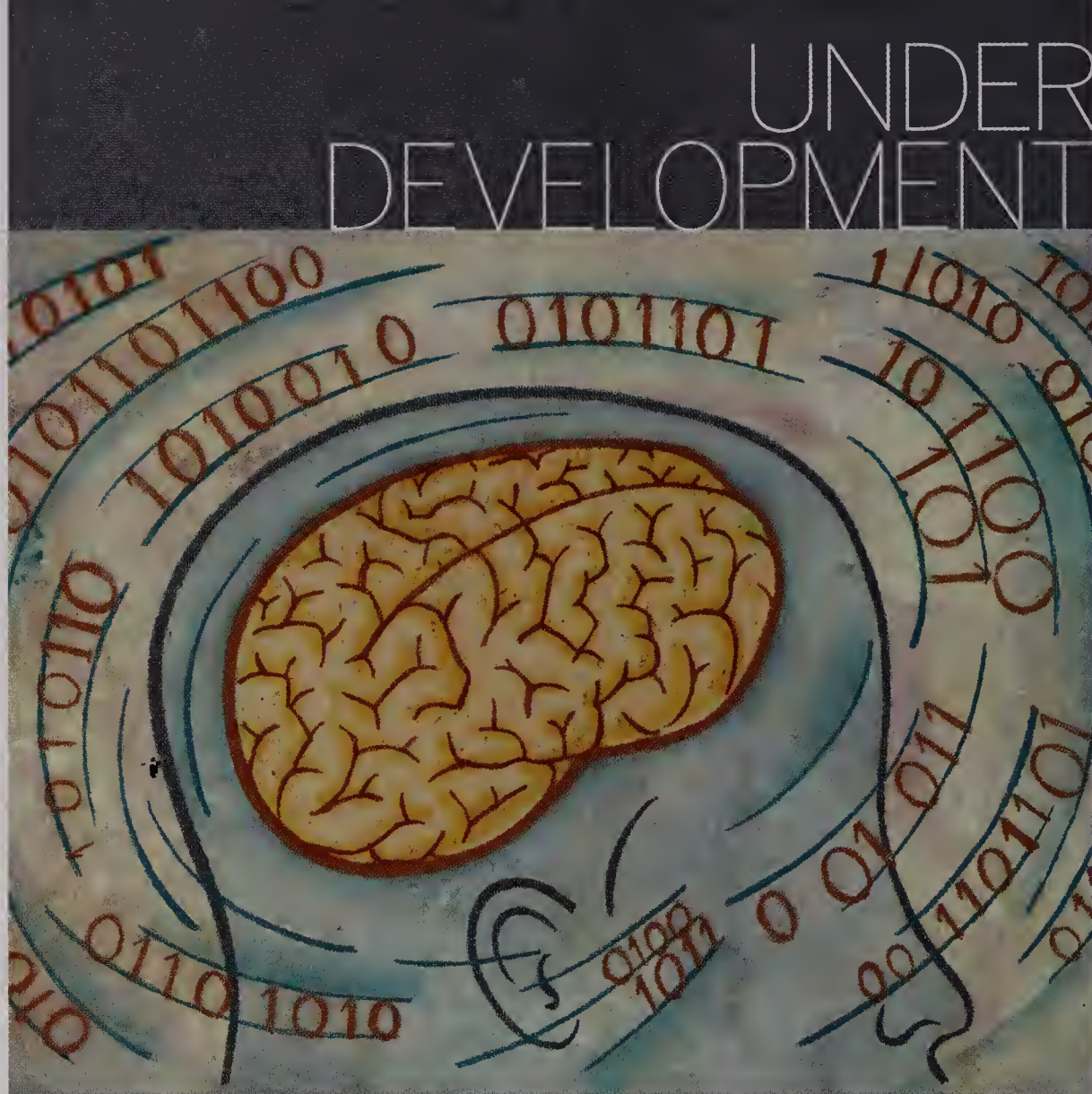
All this success convinced the city to up its investment to more than \$4 million for the first 300 cameras and to deploy as many as 1,000 cameras around New Orleans. (Right as Meffert started his pilot, the American Civil Liberties Union filed two restraining orders and threatened a lawsuit against the city; privacy and ethics issues abound and should not be discounted.)

But Meffert believes that the public safety rewards outweigh the privacy issues. He recalls an incident in which someone shot one of the wireless cameras. When damaged, the cameras automatically send a signal to police headquarters along with the last 10 minutes of footage from the location. (There's up to a week's worth of footage archived from every camera at any given time, depending on the camera's setup.) Headquarters reviewed the video and forwarded it to a cruiser in the area. Meffert says those officers quickly tracked down the suspect who, it appeared, had done more than shoot at cameras.

He was wanted for murder.

Pretty good ROI.

Senior Editor Scott Berinato can be reached at sberinato@cio.com.



Riding the (Brain) Waves

CONNECTIONS | If you've tucked away a great idea for making the direct connection between brains and computers, warm up your word processor and get typing. BCI Competition III, the third brain-computer interface competition, is accepting entries until midnight of May 22.

In recent years, BCI researchers have given communication back to people with debilitating injuries and illnesses (such as Lou Gehrig's Disease) that left them without the muscle control to so much as blink a response to a question. These interfaces provide a connection to computers by directly reading electrical impulses generated by the brain. But to date, such technologies are clumsy approximations of normal communication, with patients usually forced to build words a character at a time in a painstakingly slow process. The problem is that electrical activity in the brain is so plentiful and varied (and our access to it so limited) that it is difficult to extract all but the most rudimentary meaning from within all the noise—like trying to decipher morse code being tapped on the side of a running jet engine.

But BCI Competition III hopes to provide a forum and a test for technology that might someday allow people (debilitated or not) to more quickly and easily communicate, by letting the computer literally read their minds. "The goal of the competition is to provide an objective and fair comparison of algorithms with respect to BCI systems," says Benjamin Blankertz, a postdoctoral researcher at the Fraunhofer First research institute and a coordinator of the competition.

BCI Competition III provides several sets of brain-activity data to which competitors apply their chosen techniques. The goal is to match labeled trial data to unlabeled test data. The competitor to record the largest number of successful evaluations within each data set wins the competition (for that particular set) and a chance to present their algorithm in the *IEEE Transactions on Neural Systems and Rehabilitation Engineering* journal.

The results will be posted June 16th on the competition website. Go to www.cio.com/041505 for more information.

—Christopher Lindquist

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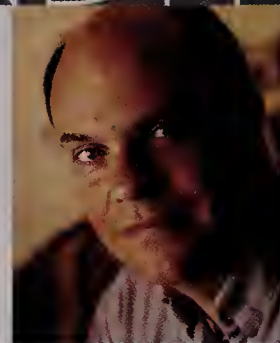


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Boiling Up Data

An information stew brimming with bad data is likely to make you sick

BY ERIC KNORR

BUSINESS INTELLIGENCE | Bad information can have very aggressive advocates.

On a wider scale than ever before, energetic hunters and gatherers collect raw data and throw it in the pot before anyone else gets a good look. Then they cook it into a dubious information stew. Such as: We're not losing sales; we're concentrating on a narrower segment of the market and doing better with it. Or: Our bonus structure is industry standard.

Yet, even as deceptive information continues to balloon, the technology to bust it has sharpened. XML is opening doors everywhere for people to consume formerly siloed data. And new breeds of business intelligence, network management and security monitoring software are actually starting to provide the smarts to make sense of it all.

Tapping the key performance indicators (KPI) amid the raw data in someone else's domain isn't easy. That's why I think the enterprise application challenge of our time is to present data hierarchically to people outside a domain so that they get not only accurate facts and figures but also an intuitive sense of those indicators' relative importance.

The problem with getting a balanced view is that it must penetrate the spin of parochial interests. Business intelligence (BI), for example, often serves a relatively narrow purpose, such as finding hidden

revenue possibilities in historical customer data. To parse and reassemble the interesting raw data underlying those BI reports requires smart sleuthing and reliable sources. We need more software embedded with the expertise to aid in that effort.

One excellent example is security event management, which taps into raw incident logs across all channels of security systems in an organization. Algorithms in products from companies such as ArcSight or net-Forensics decide which security events or patterns might be significant, or else you'd be buried in meaningless data.

The best graphical displays use historic data to frame KPIs. They use time, for instance, to provide a three-dimensional view of data so that you won't be alarmed at the number of security attacks because you know the historic pattern. I've often wished journalism would do this. Scratch the surface of an online news report from Iraq, and just beneath you should be able to find not only the current number of casualties but how long Assyria and Persia fought, and why those wars will never be forgotten.

Thinking about that sort of information architecture could cause vertigo. Yet, at the top of the BI pyramid is corporate performance management, which embraces just that sort of lofty ambition: A bird's eye view of how your business is doing. For such a grand exercise to be effective, you

XML is opening doors everywhere for people to consume formerly siloed data; they only need to know where to look.

need to ensure the accuracy and availability of data at the bottom of the pyramid, filter it according to its significance as you climb and summarize the unsummarizable at the top as you flag the important drill-down paths.

I think we're only beginning to see dashboards for upper management that give comprehensive, intelligent readouts. XML provides the potential for creating scarily accurate data descriptions of reality, even as obfuscation thrives. I don't care about the temperature of the catalytic converter; just tell me how much gas I have left.

Internet protocols and XML have created a new democracy of information; they've also fostered a laissez-faire attitude toward facts and their interpretation. But with few exceptions, the majority of people who really understand any given domain mostly agree on which data is important. Coalescing that expertise in software to create filters and channels for data as it bubbles to the top is the Holy Grail for the post-XML generation of information applications.

Eric Knorr is executive editor at large for *Infoworld*. He can be reached at eknorr@pacbell.net.

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The most sought after real estate in the United States is not a prime parcel of oceanfront property; it is the first page of returns from an Internet search engine. And because that real estate is so valuable, the battle among search engines and marketers to dominate these first pages is heating up.

Go ahead. Log on to your favorite search engine. Enter a topic and hit the return key. The left-hand side of your return page will supposedly offer third-party links from the search engine. (Although some search companies allow for a practice called "paid inclusion," in which a vendor pays to be listed as search engine editorial.) Along the right-hand side of Google's screen, you'll find links called "sponsored links." Or in the case of Yahoo and MSN Search, you will often find links at the top listing "sponsor results" and "sponsored sites," respectively.

The Federal Trade Commission calls these sponsor-fed links "paid placements"; the relevancy of such links is not topical but economic. In other words, their relevancy is based on how much an advertiser is willing to pay the search engine company per click. (Fees range from several pennies to several dollars.) I have no beef with the economic practice of paid placement. But why are search engine companies—businesses in which economic fortunes hinge on words and (more important) on the trust implied by those words—so lax when it comes to the design and incorporation of paid placement and paid inclusion links that look identical to the links returned by queries? (To be fair, sometimes paid placement links are set against a different colored background, but it's still easy to confuse search returns and advertisements.)

Bottom line: An ad is an ad is an ad, and the time has come for all search engine companies to prohibit the practice of paid inclusion. And while they're at it, they should replace the word "sponsor" with a more accurate description, namely "advertiser."

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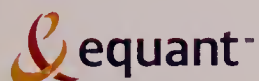
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A panel of industry experts field questions and offer advice based on their many years of experience and with the aid of the "Ideal CIO Job Spec" toolkit, developed by *CIO* magazine and the CIO Executive Council.

Developing the Next Generation of IT Leaders

Three successful CIOs, members of the CIO Executive Council, talk through their strategies for identifying future leaders and developing their IT, business and communications skills.

Must Have Leadership Skills for Stepping Up

CIOs and CIO candidates must possess certain skills to be successful at the top. Learn more on how to inspire, motivate and develop your staff; delegate effectively and successfully managed expectations from an accomplished CIO who has been there.

Becoming a Better CIO Through Running a P&L

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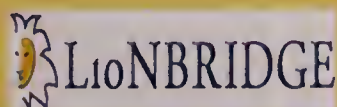
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In her 30 years in IT, **Barbra Cooper** had developed something of a reputation for coming in to clean up other CIOs' messes. Now, she had to take a long look in the mirror and fix herself.

40 | COVER STORY THE BIG FIX

In a classic case of fractured alignment, Toyota Motor Sales USA's IS staff had come to be perceived by the business as an unresponsive bureaucracy—even as IS struggled to cope with six mammoth, enterprisewide technology projects. After fighting this negative image for many years (and after being faced with mounting customer dissatisfaction), longtime CIO Barbra Cooper redesigned her department top-to-bottom, emphasizing credibility and transparency. Cooper took top-flight IT personnel out of the Data building and embedded them in the business units, giving them both accountability and responsibility. An executive steering committee now controls all of the major projects' funds in one pool of cash, and it releases funds for each project as each phase of the project's goals are achieved. *By Thomas Wailgum*

50 | WHY GEORGE BUSH NEEDS A TECHNOLOGY CZAR

IN A NEW CIO SURVEY, 41 percent of 402 CIO respondents predicted that within 15 years, India and China will overtake the United States as technology innovators, in large part due to their governments' willingness to make investments in education and basic research. To prevent this, 60 percent of respondents say the United States needs a coherent technology policy that sets specific goals for areas such as the Internet, cybersecurity, spam, research and training. Furthermore, they say the nation desperately needs a technology czar, with access to the president. This official would develop a strategic plan for technology, serve as a portfolio manager for government-sponsored R&D projects and coordinate technology policy across governmental agencies. *By Ben Worthen*

56 | SUBSCRIBE NOW, PAY LATER?

ENTERPRISE SOFTWARE VENDORS that have long sold their wares via perpetual license (you buy the code and sign up for yearly maintenance and support for an added 15 percent to 20 percent of the license fee) are increasingly experimenting with plans that allow customers to subscribe for a limited period of time. This subscription model, which includes "pay-per-use" agreements and hosted service deals, allows customers to rent software with a low up-front cost and then pay on an ongoing basis, avoiding the need to make large bets on enterprise software. However, this model comes with its own challenges. Unforeseen price hikes can result from increases in usage. And fees paid year after year may add up to a greater financial burden than up-front licensing if a company winds up using the software for 10 years or more. To get the best deal, CIOs need to predict usage patterns and calculate the expected life span of their investment. *By Susannah Patton*

66 | IN A LEAGUE OF ITS OWN

VERY FEW PEOPLE THOUGHT that Major League Baseball's website, MLB.com, would succeed. Why would fans pay a premium for online information when so much of it is freely available on television and in newspapers? But a combination of extreme attentiveness to consumer feedback and an IT architecture that can easily accommodate over 50,000 requests for data and content per second has made the site a surprising hit—not to mention a source of critical lessons for CIOs engaged in e-business, whether they're baseball fans or not. *By Jon Surmacz*

73 | G-EYE-O

AS IP-BASED SURVEILLANCE SYSTEMS become more commonplace, CIOs are being forced into the role of security guard. Part of that is technical: CIOs control the networks that support these new high-powered cameras and their related applications. But part of the reason is strategic: Surveillance applications are being used today for everything from training employees to monitoring and analyzing customer buying patterns. Vendors also would rather sell their wares to IT than to the security side because CIOs have larger budgets, and they tend to be better and faster at product implementation. But armed with a proper amount of skepticism, CIOs can use surveillance technology to create new value for the enterprise. *By Scott Berinato*



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